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# ANNALS

OF

# OPHTHALMOLOGY

A QUARTERLY JOURNAL AND REVIEW OF

## OPHTHALMIC SCIENCE.

**FOUNDED BY JAMES PLEASANT PARKER.**

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**PUBLISHED QUARTERLY,**
**BY JONES H. PARKER,**
**St. Louis, Mo., U. S. A.**
**VOL. IX.**
**1900.**

BOSTON MEDICAL
JUN 4 1902
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# INDEX.

OF

ORIGINAL CONTRIBUTORS TO THE ANNALS OF OPHTHALMOLOGY FOR THE YEAR 1900.

---

VOL. IX.

---

BLAAUW, Edmond E., M. D., Buffalo, N. Y., 400.
BURNETT, Swan M., M. D., Washington, D. C., 592.
CHANCE, Burton K., M. D., Philadelphia, Pa., 205.
CULVER, C. M., M. D., Albany, N. Y., 55.
GIFFORD, H., M. D., Omaha, Neb., 45.
GUTTMANN, J., M. D., New York, N. Y., 59.
HALE, Albert B., M. D., Chicago, Ill., 64.
HANSELL, Howard F., M. D., Philadelphia, Pa., 599.
HECKEL, Edward B., A. M., M. D., Pittsburg, Pa., 68.
LIPPINCOTT, J. A., M. D., Pittsburg, Pa., 418.
LUKENS, Charles, M. D., Philadelphia, Pa., 407.
MAY, Charles H., M. D., New York, N. Y., 73.
McCONACHIE, A. D., M. D., Baltimore, Md., 582.
PAYNE, R. W., M. D., Franklin, Ind., 611.
SATTLER, Robert, M. D., Cincinnati, O., 238.
SCHULIN, Carl, M. D., Helena, Mont., 254.
SCOTT, Kenneth, M. D., London, England, 1.
SHOEMAKER, Wm., M. D., Philadelphia, Pa., 391.
SHUMWAY, Edward A., M. D., Philadelphia, Pa., 567.
SLOGGETT, H. C., M. D., Honolulu, H. I., 251.
SOUTHARD, W. F., M. D., San Francisco, Cal., 577.
THOMSON, Edgar S., New York, N. Y., 248.
VAUGHN, Paul Turner, M. D., Hot Springs, Ark., 4, 214.
WEYMANN, M. F., M. D., St. Joseph, Mo., 381.

# INDEX OF AUTHORS FOR THE YEAR 1900.

## VOL. IX.

Abadie, 314.
Adler, 519.
Alexander, 441.
Allard, 135.
Alt, 287,
Alvarado, 511.
Androgsky, 168, 297, 340.
Augelucci, 534.
Antonelli, 175, 316, 325.
Antonia, 511.
Aubineau, 691.
Averbach, 338.
Axenfeld, 644.
Baas, 104, 124.
Back, 301.
Baeumler, 300.
Ballaban, 437.
Baso, 639.
Ba es, 468.
Bayer, 436.
Benoit, 496.
Berger, 495.
Best, 448.
Biette, 118, 531.
Bistis, 111.
Bjerrum, 539.
Blaschek, 671.
Blaauw, 400.
Boeckmann, 463.
Bogusz, 700.
Bondi, 160, 523.
Borthen, 694.
Borel, 316, 499.
Bourgeois, 674.
Buchannan, 429.
Bull, 98, 270, 282.
Buller, 427, 431.
Burnett, 592.
Burnham, 430.
Butten, 432.
Bylsma, 538.
Cabannes, 675.
Carter, 92.
Cerrillo, 151.
Chance, 205.
Chapodi, 700.
Chemolossoff, 344.
Chorzew, 171.
Cirera, 151.
Cohn, 305, 320.
Collins, 504.
Colucci, 532.
Coppez, 141.
Corcashvili, 336.
Crosz, 107.
Culver 55.
Dalen, 541.
Darier, 108, 146, 488, 508.
Daxenberg, 523.
Daxenberger, 116.
De Berardinis, 174, 529, 641.
De Buck, 154.
De Lapersonne, 507, 655.
De Lieto, 530.
Demicheri, 134, 141, 148, 149, 150, 515
Despagnet, 681, 688.
De Speville, 319.
De Vincentiis, 532.
De Wecker, 130, 147, 678.
Dianoux, 489.
Domenico, 639.
Dor, 683.
Drault, 323, 677.
Duane, 458.
Du Gourlay, 502.
Duncan, 635.
Dunn, 97.
Duvigneaud, 489.
Edmunds, 284.
Edridge, 470, 625.
Eisenhut, 126.
Elsberg, 289.
Engelmann, 106.
Enrique, 512.
Epinatieff, 342.
Eyneri, 504.
Eyre, 279.
Fage, 507.
Fehr, 298.
Fergus, 430.
Ferguson, 293.
Fernandez, 64, 506, 510, 514, 683.
Fernando, 150.
Finlay, 152.
Fox, 87, 617.
Friedenwald, 618.
Friedrich, 123.
Fromaget, 490.
Frugiuele, 535.
Fuchs, 672.
Gabler, 306.
Geolrio, 340.
Gifford, 45, 613.
Glauning, 656.
Goldzieher, 345.
Golovin, 335.
Golowin, 117.
Gonzalee, 150, 330.
Gould, 294.
Gradenigo, 637.
Grandclement, 138.
Green, 625, 470.
Gronholm, 445.
Gross, 345.
Grunert, 645, 646.
Guillery, 454, 455.
Guise, 340.
Gunn, 465.
Gutmann, 297, 348, 665.
Guttmann, 103.
Guttmann, J., 59.
Haab, 102.
Haglund, 693.
Hale, 64, 288.
Halle, 493.
Halstrom, 692.
Hansell, 99, 471, 599.
Hartwig, 619.
Hauenschild, 299, 657.
Hawkes, 635.
Hawthorne, 480.
Heckel, 68.
Heddaues, 442.
Heilmaier, 113.
Helleberg, 541.
Hellgren, 542.
Henri, 141.
Herrnheiser, 660.
Hillemanns, 654.
Hilbert, 650.
Hinshelwood, 95.
Hirsch, 653.

Hitschmann, 304.
Holden, 473, 622.
Howe, 631.
Huizinga, 276, 620.
Iatroponius, 136, 505.
Imre, 669.
Inouye, 663.
Isola, 509.
Jacovleff, 339.
Jacqueau, 110, 684.
Jarnatowski, 142.
Jitta, 145.
Jocqs, 139, 315, 317, 674, 679, 683.
Jonas, 440.
Kalt, 493.
Kaster, 568.
Katz, 343.
Kibbe, 277.
Kiribuchi, 661.
Kirschbaumer, 693.
Klein, 524, 696.
Knapp, 614.
Koenig, 681.
Konigstein, 698.
Koster, 156.
Kroger, 167.
Kuhnt, 301, 443.
Kunn, 493.
Lagrange, 309, 319, 499, 501, 507, 676.
Lagleyze, 516.
Landolt, 80, 96, 110.
Lapersonne, 106, 131.
Lawford, 88.
Leber, 134.
Leonard, 146, 691.
Leprince, 315.
Leyder-Borthen, 605.
Linden, 540.
Lie, 695.
Lippincott, 418.
Lobanoff, 337, 343.
Lobanow, 166.
Lodato, 175.
Logetchnikoff, 339.
Lokteff, 344.
Lomas, 149.
Lopez, 334.
Majewski, 171.
Manzutto, 670.
Masselon, 435, 505.
May, C. H., 73.
May, E., 126.
Mendel, 664.
Michel, 652, 660.
Mills, 290.
Mohilla, 114.
Mohr, 347, 439, 663.
Morgano, 638.
Morton, 290.
Morax, 487.
Mulder, 155.
Myers, 374.
Natanson, 438, 692.
Nedden, 439.
Nere, 633.
Neuschuller, 132, 140, 172.
Neustatter, 643.
Neve, 433, 633.
Nicati, 327.
Nicolai, 680.
Nicolli, 502.
Noyes, 267.
Obardio, 140.
Oertzen, 112.
Ogilvie, 630.
Ohlemann, 306.
Oliver, 481.
Ollendorf, 445.
Oppenheimer, 454.
Ovio, 679.
Pagenstecher, 658.
Panas, 143.
Pansier, 137.
Patrick, 693.
Paunblain, 685.
Payne, 611.
Peck, 93.
Pergeus, 325.
Peters, 451.
Petit, 325.
Pez, 172.
Pihl, 302.
Pihl, 655.
Pilcz, 104.
Pisenti, 503.
Plant, 300.
Pockley, 292.
Pollak, 163.
Posey, 422, 622.
Praun, 305.
Proscher, 305.
Purtscher, 649.
Pyle, 283.
Querenghi, 145, 492.
Raehlmann, 169.
Randolph, 467.
Remmlinger, 114.
Ricchi, 528.
Roberts, 474.
Rocha, 331.
Rochon, 489.
Rogers, 632.
Rogman, 136, 323.
Rohmer, 137, 685.
Rolet, 501.
Rosenbach, 447.
Rowan, 432, 635.
Roy, 629.
Rumszewis, 170.
Sachs, 671.
Salterian, 331.
Santos Fernandez, 64, 150, 152, 317, 683.
Sattler, 238, 615.
Schaefer, 123.
Schieck, 644.
Schiele, 450.
Schmidt-Rimpler, 4, 214, 658, 667.
Schulin, 254.
Schulte, 105, 537.
Schultz, 448.
Scott, 1.
Scrini, 327.
Seidenmann, 342.
Seiffer, 670.
Selinsky, 297, 341.
Sensberg, 506.
Sgrosso, 173, 640.
Shoemaker, 391.
Siefert, 116.
Silex, 309, 662, 665.
Sloggett, 251.
Smith, 75, 633.
Smirnow, 170.
Sneguirew 166, 677.
Snell, 82, 460.
Solomonsohn, 160.
Sourdilles, 493, 509, 686.
Stangulaneau, 494.
Stevenson, 280, 285, 427.
Steinitz, 448.
Stirling, 295.
Stock, 107.
Stoltzing, 299.
Straub, 153, 155.
Strzeminski, 321, 687.
Taylor, 293.
Terrier, 322.
Terrien, 687.
Terson, A., 304, 320.
Terson, Fils., 139, 679.
Terson, Pere, 144, 320.
Thilleiz, 140.
Thompson, 248.
Tiffany, 275.
Tornabene, 535.
Touche, 688.
Trantas, 140, 508.
Treutler, 648.

Troncoso, 489.
Trousseau, 503.
Truck, 321, 324.
Valude, 130, 491, 680.
Van Duyse, 676.
Vaughn, 4, 214.
Veillon, 487.
Velez, 151, 514.
Vereshiaguin, 344.
Vervoort, 307.
Vieusse, 320.
Vogel, 446.
Volk, 128.
Von Grosz, 134.
Von Hippel, 308.
Vossius, 119.
Wagenmann, 452.
Wagner, 113.
Weifenbach, 125.
Welander, 166.
Wernicke, 329.
Wessely, 651.
West, 89.
Weymann, 3, 81.
Wicherlicviz, 158.
Widmark, 540.
Williams, 468,
Williamson, 474.
Wolff, 453.
Wolff, H., 668.
Wolff, J.,, 628.
Wolfberg, 105, 303, 440, 442, 444, 647.
Wood, 631,
Woskresseusky, 690.

## INDEX OF SUBJECTS FOR THE YEAR 1900.

## VOL. IX.

Abscess retrobulbar, 59.
Abstracts, of current literature—
  American, 75, 267, 458, 613.
  Austro-Hungarian, 158, 345, 519, 696.
  Dutch, 193, 536.
  English, 75, 267, 458, 613.
  " Colonial, 292, 427, 633.
  French, 130, 314, 487, 674.
  German, 102, 297, 435, 643.
  Italian, 172, 528, 637.
  Russian and Scandinavian, 166, 335, 539, 692.
  Spanish and Portugese, 148, 329, 510.
Accidents, prevention of occurring in trades, 82.
Accommodation, theories of, 489.
  amplitude of, measurement of, 502.
  Tscherning's theory of, 680.
Accommodative paresis, 538.
Acromegaly, changes in optic chiasm in, 473.
Amaurosis, double hysterical, 331-
  reflex, 251.
Amaurotic, idiocy—Sach's disease, 663.
Amblyopia.
  caused by peripherial neuritis and malnutrition, 683.
  ex anopsia does it exist, 524, 660, 665.
  from malnutrition, 512.
  of anemic origin, 319.
  quinin, 155
  tobacco, 334.
  toxic, caused by santonin, 663.
Aniridia.
  congenital, 343.
  two cases, 482.
Anisocoria, examination for, 123.
Anisometropia, 254.
  headaches with slight degree of, 343.
Anthropometry, the eye in, 163.
Aphakia, pseudo accommodation in, 136.
Aqueous humor, specific gravity of, 117.
Arteries, retinal spasms, 671.
Aspergillus fumigatus, keratomycosis due to, 639.
Astigmatism, of oblique rays, application skiascopy in, 323.
Bacteriology, diplococcus intra cellular is meningitidis of the eye, 693.
  non-pathogenic bacteria influence of, 337.
  pneumococci on normal conjunctiva, 112.
Balneo therapy, 306.
Bandages, hollow, application of, 303.
  treatment of eyes after operation without, 114.
Blepharitis, acarica, 169.
  ciliaris and demodex folliculorum, 155.
Blepharospasm, functional, surgical of, 172.
Blindness, after hematemesis, 150.
Blind spots, physiological variations and size of, 99.
Book notices, 192, 362, 555, 714.
Cataract, complicated, operative of, 297.
  congenital in relatives, 503.
  contributions to study of, 148.
  diabetic, 68.
  etiology of, 440.
  extraction with adherent conjunctival flap, 137.
  extraction in capsule, 633.
  following hemorrhage, 302.
  immature and partially stationary, 540.
  in connection with tetanus, 339.
  operation, 658.
  operation on second eye after loss of first, 664.
  produced by electric shock, 661.
  secondary, 468.
  secondary membrano, 267.
  senile, 430.
  simple extraction of, in glaucomatous eyes, 150.
  spontaneous disappearance of senile, 283.
  zonular, with simulated hemeralopia, 538.
Cerebral blindness of topographical senses, 688.

- Chalazion, etiology and treatment, 687.
- Choroid, coloboma of, 170.
  - histological study of nervous system of, 342.
  - propria structure of in adult, 170.
  - tumors of, 515.
- Cilium in anterior chamber, 454.
- Color, blindness, inefficiency of tests of board of trade, 470.
  - perception of colored letters on graduated gray shades. 132.
  - perception, defective and vision, 468.
  - perception, order of development of in a child, 622.
  - preference in a child, 662.
- Conjunctiva, absorption of liquids by 343.
  - chancre of, 493, 529.
  - diphtheria of, 280.
  - disinfection of, 541.
  - pemphigus of, 652.
  - primary tuberculosis, 675.
  - tuberculosis of, 114, 279, 301, 320.
  - unpigmented naevus of, 653.
- Conjunctival asthma, 447.
- Conjunctivitis, due to diplobacillus, 531.
  - due to pneumococci, 493.
  - endemic bath, 298.
  - Granular. 144.
  - metastatic blenorrhagic, 507.
  - spring in Russia, 692.
  - vaccinalis, 655.
- Cornea, blood staining, 329.
  - bloody infiltration of, 315.
  - electric cautery in affections of, 275.
  - epithelial tumors of. 493.
  - papilloma of. 141, 147.
  - changes in curvature, after cataract extraction, 648.
  - clearing of opacities, 672.
  - rodent ulcer of, 654.
  - symmetrical dytrophy of, 322.
  - tattooing of, 151.
  - traumatic ribbon-shaped opacity of, 670.
- Corneal astigmatism, changes in after operations for strabismus, 358.
  - cloundings interfering with nutrition, 448.
  - suture, 340, 443.
  - tuberculosis, 506.
  - ulcers serpiginous, 511.
  - wound after cataract operation, slow healing, 492.
  - wounds, value of new antiseptics in, 299.
- Cryptophthalmus following erysipilas, 506.
- Cycloplegia, value of in optometric examination, 55.
- Cysts, pathogeny of retrobulbar colobomatous, 676.
- Cysticerci, intraocular, report of extraction of seven, 658.
- Cysticercus, electricity in diagnosis of subretinic, 532.
  - intraocular, 174.
- Dacryocystitis, purulent bilateral, 146.
  - treatment of, with soluble bougies, 448.
- Daviel, a follower of, 674.
- Delirium, post operative, 490.
- Dental and ocular affections, connection between, 681.
- Dermoid, cysts of orbits, 501.
  - ocular, 175.
- Diphtheria, ocular, 141.
  - of eyes, treatment of, 105.
- Electric flashes, effect on eye, 629.
  - shock, cataract produced by, 661.
- Enophthalmos, experimental, 284.
  - relation of Tenon's capsule and check ligaments, 391.
  - transplantation of mucous membrane from lip, 336.
  - traumatic, 137.
- Entropion, cured by electricity, 151.
- Eneucleation and its substitute, 667.
  - local anesthetic in, 514.
- Episcleritis, periodica fugax, 299.
- Evisceration, of eyeball, strictly simple, 613.
- Eviscero-neurotomy, 276.
- Exenteration, with aid of cautery, 507.
- Exophthalmos, experimental, 284.
  - intermittent, 304.
  - operative treatment of, 335.
  - pulsating, 292.
  - relation of Tenon's capsule and check ligament to, 391.
- Eyeball, after-treatment in operations on, 665
  - excision of. 431.
  - rupture of, from intraocular hemorrhage, 651.
  - suppuration of, abortive treatment, 460.
  - treatment of perforating wounds of, 656.
- Eye strain, headaches from, 631.
- Foreign bodies, in eye, 691.
  - removal of, 407.
- Forgetting how to see, 644.
- Frontal sinus, lesions of, 238.
  - sinusitis, ethmoido, 325
- Fusion movements of eye, effect of poison, 455.
- Ganglion cells in iris, 168.
- Gasserian ganglion, extirpation of, 345.
- Glanders, ocular. 321.
- Glaucoma, in the Orient, 678.
  - following albuminuric retinitis, 679.
  - massage in, 294.
  - resection of cervical ganglia in, 136, 439.
  - results of operations for chronic, 123.
  - scleral scar in, 297, 341.
  - simple chronic, is iridectomy useful in, 136, 321.
  - simple treatment by galvanization cervical sympathetic, 135.
  - spasm of accommodation is relieved by eserin, 418.
  - treatment of, 314.
- Goiter, exophthalmos, sympathetic nerve section in, 149.
- Gonorrhea, its relation to diseases of the eye, 427.
- Green vision, 281.
- Hemerlopia. treatment with horse serum, 317.
- Hemianopsia, double homonymous, 684.
  - its forms, anatomy, etiology, diagnosis, prognosis and therapy, 4, 214.
- Hemicrania with relapsing ocular-motor paralysis, 670.

Hemorrhage, intraocular, prognosis of life, 282.
Hydatid cyst of orbit, 509.
Hydrops, encapsulated in Tenon's space, 309, 319.
Hysterical ocular syndromes, 681.
Injuries to eye, causing affection of uveal tract, 126.
  contribution to statistics of, 128.
  from electric light flash, 87.
  " glowing metals, 125.
  " lime, 126.
  to earning capacity from loss of vision, 599.
  treatment of deep-seated, 300.
Intraocular fluids, elimination of, 496.
Iridiremia, traumatic, 536.
Iridiremy, 700.
Iridodialysis, from revolver shot, 437.
Iridocyclitis hemorrhagic fungus, 505.
Iridoplegia, in contusion of eyeball, 514.
Iris, cyst of, 499.
  granuloma of, 641.
  radial wound of, due to contusion, 691.
  serous cyst of, 523.
  tumor of, 541.
Iritis, hemorrhagic, 160.
  primary cause of, 660.
  syphilitic prognostic value of, 503.
Iritomy, for freeing iris from cornea, 130.
Jonnesco's, operation, 619.
Kasmir Mission Hospital, 433.
Keratitis, dendritica, 124.
  dendritica, treatment of, 618.
  epithelialis, 611.
  fascicular, 248.
  interstitial in acquired syphilis, 88.
  lattice like, 102.
  neuro-paralytic, 107, 134, 445.
  parenchymatous, 687.
  " myxedema, 138.
  profunda, treatment of, 348.
  striped surgical treatment of, 153.
Keratoconus, treatment of, 173.
  surgical treatment of, 615.
  treatment with galvanocautery, 614.
Kronelin's operation, 335.
  operation, 680.
Lacrymal, bacteriological researches in, 528.
  complications, 324.
  gland, traumatic prolapse, of, 650.
  gland, tumors of, 323.
  lesions of apparatus, treatment by electricity, 502.
  obstruction in young, 465.
  passages in lower animals, 494.
  pathology and anatomy in adults and new-born, 498.
  tumor, treatment of, 317.
  tumors, the Denti procedure for cure of, 640.
La Grippe, eye complications following, 150.
Lenticonus, posterior double, 428.
Lens, double subconjuhctival luxation of, 139.
  extracted to remove pupillary obstruction, 139.
  nutrition of, 679.
  regeneration of, 104, 467.
  traumatic expulsion of, 140.
  weight of human crystalline, 646.
Leprosy of the eye, 694.
  ocular, 633.
Lids, acute edema of, 151.
  angiomegaly of, 685.
  destructive ulceration of, 1.
  electric cautery in affections of, 275.
  electrolysis, in granular diseases of, 274.
  experimental plastic operations on, 140.
  gangrene of, 300.
  malignant pustule of, 305.
  neuro fibroma of skin of, 677.
Ligation of gall bladder, changes in eye after, 168.
Locomotor ataxia eye symptoms, 480, 481.
Lohenstein's hydrodiascope, 171.
Loupe, transformation of, 495.
Macula, cortical center for, 683.
  holes at, 630.
Magnet, Hirschberg's 700.
  giant in removing iron splinters from vitreous, 539.
Massage, as applied to eyes, 108, 342.
  following cataract extraction, 140.
  in various eye diseases, 166.
Materia Medica, abrin, 685.
  acoin, 92.
  argentamin, 669.
  chloretone, 290.
  cocain and eucain, relative toxicity, 93.
  dionin, 105, 146, 442, 488.
  eserin, 445.
  euphthalmin, 95, 288, 669.
  gallican, 450.
  glycerin, tragacanth jelly, 303.
  horse, serum, 510.
  hydrargyrum, 430.
  iodogallican, 450.
  iodic acid, 450.
  jequirity, 144, 435, 505.
  kali-iodid, 430.
  largin, 166, 285.
  light in treatment of eye diseases, 116.
  methylene blue,, 147.
  nirvanin, 289.
  oily collyria, 327.
  pilocarpin, 430.
  protargol, 106, 146, 158, 287, 427.
  quinin, in suppuration of anterior segment of eye, 330.
  scopolamin and atropin, 632.
  " poisoning with, 150.
  serum therapy in diphtheric conjct., 113.
  sperminum, 339.
  sublimate solutions, use of strong, 103.
  suprarenal extract, 110, 508, 631.
  tincture iodin in marginal ulcer of cornea, 618.
  tuberculin in tuberculosis of iris, 644.
  validol, in scotoma, scintillians, 643.
Melano-sarcoma, multiple, 452.
Mental disturbances, following eye operations, 627.
Motor apparatus, effect of poisoning on, 454.
Motor oculi, paralysis of, 315.
  " " traumatic origin, 143.
  paralysis of, recurrent, 295.
Muscles, congenital effects together with retraction movements, 628.

**Muscles**, disassociated paralysis of, in Tabes, 523.
  paralysis of external recti 145.
  paralysis of superior oblique, caused by grippe, 344.
  so-called dilator of pupil, 535.
  stereoscope as a test for insufficiency of, 98.
**Myopia**, lasting results in operation for, 308.
  surgical treatment, 270, 309, 345.
**Nasal** affections, connection between eye and, 113.
  duct, a gnat in, 444.
  " tuberculosis of, 116.
**Neurectomy**, optic ciliary, 118.
**Neuritis-optico**, following inflammation of spenoidal sinus, 106, 131.
  in Potts' disease, 152.
**News** items and announcements, 177, 351, 543, 703.
**Nutrition**, process of intraocular, 134.
**Ocular** findings, 205.
  hydrostatics, 327.
  lesions, congenital, 316.
  tension, sympathetic irritation in, 172.
  traumatism and hystero-pseudo traumatism, 316, 499.
**Oculomotor**, periodical paralysis of, 638.
**Ophthalmia** gonorrheal, treatment of, 647.
  hepatica, 649.
  neonatorum, 292, 439.
  nodosa Saemisch, 436.
  sympathetica, anatomical examination in, 645.
  sympathetica, clinical notes on, 45.
  sympathetic, 152, 441, 510.
**Ophthalmoplegia** externa, 340.
**Ophthalmoplegic** migraine, alternating, 134.
**Ophthalmoscope**, a new, 73, 453.
**Ophthalmoscopic** exploration of anterior portion of fundus, 508.
  stigmata of acquired syphilis, 175.
**Optic**, atrophy, hereditary, 635.
  commissure, syphilitic deposit in, 293.
  nerve atrophy, hereditary, 432.
  " post-neuritic atrophy after mumps, 683.
  neuritis acute uremic, 534.
  " double, from cerebellar tumor, 635.
  neuritis in children, 429.
  " with headache, 474.
  neurotomy, degeneration of cells, paradoxical with injection of quinin, 677.
**Orbit**, meningocele of, 516.
  operation upon through temporal bone, 680.
**Orbital** cellulitis, 504.
  phlegmon and ethmoidal sinusitis, 674.
**Pannus** trachomatosus, 301.
  trachomatosus and periectomy, 463.
**Papilloma**, symmetrical of external canthi, 532.
**Pericystitis** gangrenous, 487.
**Phototherapy**, 523.
**Plica semilunaris**, lympho-sarcoma of 530.
**Portable** dark box for ophthalmoscopic purposes, 160.
**Prelacrymal** tumor, 501.
**Pterygia**, pathology and treatment, 381.
**Ptosis**, congenital, treatment of, 489.
  modification of Pagenstecher's operation for, 156.
**Pupillary** membrane, anomalons persistent, 537.
  phenomenon, a new, 104.
  reaction, 307.
  " examination with regard to refraction, 668.
  reaction, so-called paradoxical, 662.
**Recurrent** fever, eye diseases in, 344.
**Refraction**, centration of lenses, 97.
  changes in during seven years, 741.
  changes in diabetes, sudden, 509.
  comparative skiascopic, 171.
**Reports**, 32nd of Upper Hessian Society of Natural Science and Medicine, 119.
**Report** of cases, 692.
**Retinal** detachment, 307.
**Retinitis**, albuminuric, 89.
  leprous, chorio, 111.
  proliferans, 535.
**Rhinitis** chronic, relation to ocular affections, 400.
**Roentgen** rays, in locating foreign bodies in eye, 85, 277.
**Rosenmuller's** abscess of gland of, 686.
**Royal** London Ophthalmic Hospital, 422.
**Sarcoma** of choroid, 635.
  " scleral puncture in, 447.
  of eye, 693.
  of uveal tract, prognosis of, 107.
**Scrofulous** eye affections, treatment of, 442.
**Sight**, limitations of physical methods in investigation of, 625.
**Simulated** blindness, 167.
**Spring** catarrh in Russia, 438.
**Strabismus**, advances in surgical treatment of, 80.
  divergent, simple operation for, 617.
  etiology and treatment, 440.
  treatment in young children, 75.
**Subconjunctival** injections, 446.
  lipoma and dermal lipoma, 507.
  vessels, aparent coloration of, 145.
**Symblepharon**, peculiar form, 529.
**Syphilis**, congenital changes in eye, 344.
  ocular treatment of, 511.
**Syphilitic** chancre of bulbar conjunctiva, 493.
**Tabes** dorsalis, without loss of pupillary reflex, 154.
**Tarsorrhapy**, internal, 679.
**Tear** passages, surgery of, 620.
  sac, guide for incising from outside, 304, 320.
**Tears**, bactericidal action of, 130.
**Tenotomy**, after-treatment of, 458.
**Thiersch**, transplantation on conjunctiva, 347.
**Toluca** Hospitals, eye operations in, 331.
**Tonometer**, a new ocular, 637.
**Trachoma**, commissure in, 166.
  in conscripts in Finnland, 540.

Trachoma, treatment, recent methods, 519.
treatment, mechanical and operative, 542.
Transmission of irritation of one eye to other, 651.
Traumatism, ocular hystero and pseudo-hystero, 316, 499.
Trochlear nerves, paralysis of both, 671.
Tuberculosis and sympathetic ophthalmia, 451.
Tumors of orbit, 325, 337.
Type, in ophthalmological journals, 303, 320.
Vertigo, ocular, 696, 698.
Vision in children under colonial condition, 298.
Visual acuity and chromatic senses in railway engineers and firemen, 688.
Visual and ophthalmic expressions of cardiac origin, 491.
Vitreous, hemorrhages into, recurrent, 110.
hemorrhages, spontaneous, 142.
Vortex veins, anomalies in, 537.

## INDEX OF BOOKS REVIEWED DURING THE YEAR 1900. VOL. IX.

ALLEN, Edmund Turney, "The science of higher prisms," 363.
Andrae, Julius, "The injuries of the visual organ by lime and similar substances," 375.

BAUDRY, S., "Injuries to the eye in their medico-legal aspect," 362.
Bernheimer, St., "The nuclei and roots of the ocular nerves, their connection and their relation to the cortex of the brain," 561.
Borthen-Lyder, "Leprosy of the eye," 378.

COHN, Herman, "A card for testing of the finer color sense," 363.

DAVIES, A. E., "The refraction of the eye including a complete treatise on ophthalmometry," 714.
Deaver, John B., "Surgical anatomy," 195.
"A treaties on human anatomy in its application to practice of medicine and surgery," 557.

ELSCHNIG, Anton, "The pathologic anatomy of the optic nerve entrance," 556.

FICK, A. E., "Hygiene of the eye," 370.
"Blindness," 371.
Friedenberg, Percy, "The ophthalmic patient," 714.

GOLDZIEHER, Wilhelm, "Ocular therapeutics," 727.
Gould, Geo. M., "A pocket medical dictionary," 364.
"The American year-book of medicine and surgery," 365.
Greeff, R., "Microscopic Anotomy of the optic nerve and the retina," 563.

HAAB, O., "Atlas of ophthalmoscopy," 731.
"Sketch book for ophthalmoscopic observations," 733.
Hartridge, Gustavus, "The refraction of the eye; a manual for students," 557.
Hirschberg, Prof., "Ancient history of ophthalmology," 366.

JACKSON, Edward, "A manual of the diagnosis and treatment of the diseases of the eye," 201.

KAHN, B. & Son., "A new test card for illiterates," 364.
Koelliker, A., "New observations on the anatomy of the optic chiasma," 559.
Kraemer, A., "The animal parasites of the eye," 560.

MAGNUS, Herman, "The anatomy of the eye with reference to its historic development, 556."
May, Charles H., "Manual of the deseases of the eye for students and general practitioners," 718.
Mellinger, Carl, "XXXV annual report of the eye hospital at Basel," 733.

NORRIS and Oliver, "System of diseases of the eye, Vol. IV," 192.
Norton, A. B., "Ophthalmic diseases and therapeutics," 365.
Nussbaum, M., "Embryology of the human eye," 719.

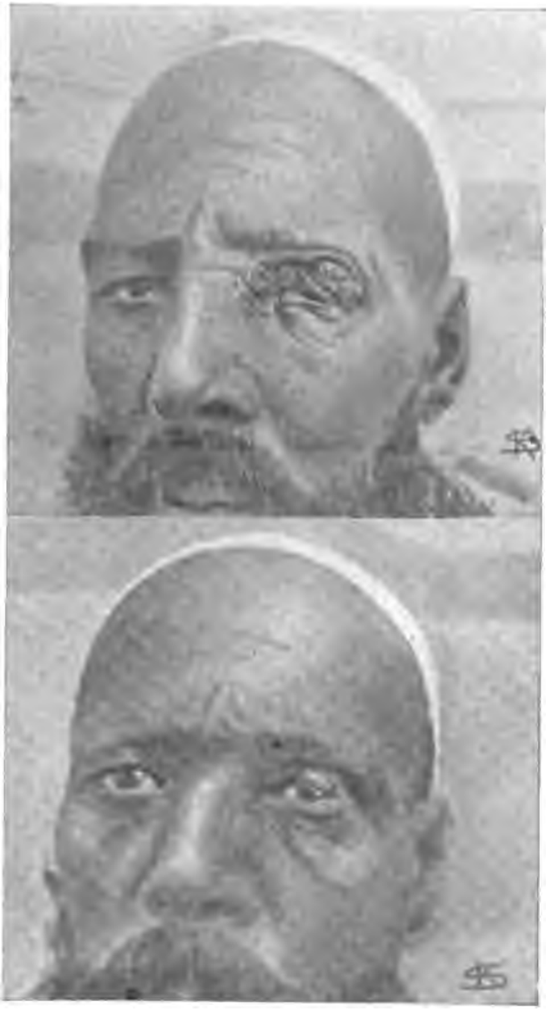
PYLE, Walter L., "A manual of personal hygiene," 718.

RAMON, S. Y. Cajal, "The structure of the optic chiasma, with a general theory of the crossing of the nerve fibres, 373.

SALZMANN, M., "Sections of the human eye," 203.
Schultze, O., "Microscopic anatomy of the lens and the zonular ciliaris," 565.
Seabrook, H. H., "Heterophorias and insufficiencies. A clinical study," 555
Snell, Simeon, "On prevention of eye accidents in trades," 200.
Sutter, W. N., "Hand-book of optics," 198.

TAYLOR, Arthur N., "The law in its relations to physicians," 716.
The Keystone, "A treatise on the shadow test," 202.
THORINGTON, James, "Refraction and how to refract," 194.

VON HIPPEL, E., "Malformations and congenital anomalies of the eye," 721.
Von Michel, J. "Contributions on the onkology of the eye," 372.



(28th of Feb. 1899.)
(13th of April 1899.)
Destructive Ulceration of Eyelids: Cure.

THE ANNALS
OF
OPHTHALMOLOGY.

VOL. IX. JANUARY, 1900. No. 1.

# DESTRUCTIVE ULCERATION OF EYELIDS—CURE.*

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LONDON, ENGLAND.

This case, represented by the drawing which I have made, strongly resembled a destructive ulceration of malignant nature; and it was only after microscopical examination of a portion removed, kindly made for me by Dr. St. Clair Symmers, that this point was elucidated.

The diagnosis was rendered more difficult, as no consistent history could be obtained from the patient. The case was under my observation for twelve days before any treatment, beyond ordinary cleansing, was begun, and during that time the condition remained stationary, both in regard to size and appearance; yet the patient stated that the ulceration was only of two months' duration, having begun near the inner angle of the eyelids as a small pustule, which burst, and then spread to the condition here depicted.

The treatment to be mentioned presently, was begun on March 5th, 1899, and completed on April 15th—forty-one days in all. The lapse of time between the two pictures, is forty-four days.

The patient who was about 45 years old, was a shoemaker of the Egyptian peasant class; he seemed to be worn and anxious, and in a somewhat low state of health.

The left orbital area was occupied by an ulceration, involving the whole of the upper eyelid to the eyebrows and also the greater part of the lower lid; it extended from beyond the outer canthus, inward to the side of the nose. The whole surface measured 42 m.m. transversely, and 16 m.m. vertically (the length of right palpebral fissure was 28 m.m.). The globe of the eye was quite intact, and there was only very slight and limited redness of the palpebral conjunctiva.

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*Read before the British Medical Association, 1899.

The general surface of the affected area, which was very irregular, was coarsely granular; at the inner corner it was sloughing and purulent, and covered some bare bone in the nasal canal. The entire margin of the ulceration was steeply raised, hard and indurated, and the tissue around it, dusky and edematous; the base was 'firm and resilient,' enabling it to be moved as a whole. There was also a small separate mass of induration lying under the skin, adjacent to the site of the lower punctum lachrymalis. There was no glandular enlargement.

Although there was no decided history of syphilis, it seemed advisable to treat it on such lines. Inunction was accordingly employed, by thoroughly rubbing three grammes of soap of mercury every day into successive parts of the body, viz.: the lower legs, thighs, chest, back and upper arms, in rotation; each sixth day he received a hot bath, and solution of chlorate of potash was used as a mouth-wash every 2-3 hours. There was no salivation produced. Locally, the ulcerated surface was cleansed gently, and then dusted with europhen in powder, and covered lightly with a simple dressing on which vaseline was smeared.

The man's whole general appearance improved; the affected area became quickly less and soon healed entirely, leaving only a small point at the inner canthus, which opened directly into the lachrymal sac, whose anterior wall had been destroyed; the periosteum lining its wall had partly disappeared, and also that of the upper portion of the nasal canal. The lax tissue of what remained of the eyelids and the orbicularis palpebrarum muscle, adapted themselves to the altered conditions during the process of healing, and when this was complete, afforded very efficient protection to the eye. The patient would not consent to the performance of any operation afterward, with the object of forming a better eyelid.

I saw the patient again casually, about three weeks after the date of the second picture, and there was still further improvement; the opening into the lachrymal sac was not so apparent, the portion of everted conjunctiva on the upper eyelid was smaller, and the globe of the eye, in which vision was normal, was more easily covered by muscular contraction.

It is almost needless to refer specially to europhen, which seemed to act locally with such marked benefit. It is a yellow, amorphous, and almost odorless powder, which does not cake nor produce irritation, and is non-poisonous; it is said to act only when in direct contact with the secreting surface, where it is decomposed, and its 28 per cent. of iodine released.

# HEMIANOPSIA (HALF-BLINDNESS). ITS FORMS, ANATOMY, ETIOLOGY, DIAGNOSIS, PROGNOSIS AND THERAPY.

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Hemianopsia, (hemiablepsia, hemianopia, hemiopia, half-blindness) in cerebral affections can be caused by disturbances affecting the opticus, the chiasma or the tractus lying at the base of the brain, the radiation of the tractus to the optic center, or finally by disturbances which injure the optic center itself, and consequently interfere with its functions. Fields of vision similar to the hemianopic are seen occasionally if the optic nerve be injured, also in neuritis, in atrophy and in retinal affections. These must be differentiated from hemianopsia caused by intra-cranial affections. The diagnosis is easy if intra-ocular disease be present, but more difficult if the opticus be affected without evident pathologic change in the papilla optica—as is often the case in retro-bulbar neuritis. As a rule here, however, the existing anomalies in the field of vision do not show such a pronounced straight line of section, dividing the field of vision into a seeing and a blind half, but generally there is also peripheral contraction of the remaining unaffected halves of the visual field. Moreover, in cases of true hemianopsia full central vision usually exists, while in neuritic and atrophic processes associated with large defects in the field of vision, central vision is generally decidedly lessened. Small symmetrical anomalies of the field of vision in both eyes resembling each other are frequent in diseases of the opticus also those few cases of superior and inferior or lateral hemianopsias which are difficult to prove on account of intra-cranial symptoms are without doubt frequently the sequence of peripheral diseases of the opticus. That a certain conformity and symmetry can be thus produced in defects found in both fields of vision appears not remarkable if we remember how often bilaterally from retro-bulbar neuritis, central scotoma and also diminution of the fibers leading to the macula lutea is observed. If the retro-bulbar neuritis be so extensive that it has caused symmetrical loss of a whole half of the field of vision it usually progresses farther and does not suddenly cease. At the same time, after disappearance of the inflammation, a more or less extensive white discoloration of the papilla begins; this occurs very late, or not at all, in cases of intracranial hemianopsia. If a double-sided hemianopsia commence suddenly this fact opposes the supposition that it is in consequence of a bilateral neuritis. Generally complicating cerebral symptoms indicate the correct diagnosis.

## COURSE AND ORIGIN OF OPTIC NERVE FIBERS.

It is very important, if we desire an explanation of hemianopsias, to decide how the nerve fibers supplying different parts of the retina take their course in the opticus, the chiasma and the tractus. The controversy concerning this subject—if there be a total decussation of the optic fibers and consequently all of the fibers of the opticus on one side passing over to the tractus on the other side, or only a semi-decussation—has been ventilated a long time. The question has been decided by an overwhelming majority of clinicians that a semi-decussation exists, which decision admits most easily an explanation of the facts observed at the sick bed. But anatomical observations also support it, in spite of the fact that quite recently such an authority as Kölliker has decided in favor of total decussation.

It appears that Joseph and Carl Wenzel, from their anatomical preparations for their work, "De penitiori structura cerebri, Tübingen, 1812," were the first to come to the conclusion that a semi-decussation existed—a conclusion which later was defended, especially by Johannes Müller. A. von Graefe, in 1856, in this way explained those cases of hemianopsia observed by him. On account of the articles written by von Bisiadecki (1861), and of the anatomical observations published by Mandelstamm and Michel[2] in the same volume of von Graefe's Archives in 1873, semi-decussation in man was again opposed, and a total decussation defended. The manner in which, however, they attempted to explain the most frequent form of hemianopsia—the homonymous—through pressure of a tumor, or through enlargement of the recessus which lies over the chiasma and communicates with the third ventricle, upon only one or the other lateral angle of the chiasma does not correspond with anatomo-pathological observations, nor is it possible.

In the following year Gudden[3] opposed from an anatomical, as well as from an experimental stand-point, this opinion, for he observed that in all animals whose fields of vision are separated a complete decussation of the optic nerve is found, while in those whose fields of vision fall together (for instance in dogs) a semi-decussation is present. This opinion, however, as later observations (particularly by Michel) have shown, has not been proven as always correct, relative to the animal kingdom. On the other hand, it was decided by every side that a semi-decussation existed in man, and it was also decided, as Gudden had already observed, that the non-decussating fibers of the opticus lie particularly in the upper half of the chiasma (Bernheim[4]). Of special importance were the anatomo-pathologic investigations in cases where a unilateral optic atrophy, such as exists in phthisis bulbi, was present and had extended backward through the chiasma into the tractus. Of course only such cases as led either to complete atrophy in the tractus on the oppoite side (total decussation), or such in which the tractus on the same side was partially involved (semi-decussation), were really valuable as demonstrations. A partial atrophy of the opposite tractus alone (Popp, Michel) can demonstrate nothing, for the possibility remains that the centripetal atrophy was only partial, and on the other side of the chiasma only that part of the fibers was involved which went to the atrophic tractus.

A few observations published earlier had not given conclusive results. Woinow[5], in 1875, at the Ophthalmologic

Congress in Heidelberg, was the first to produce a chiasma preparation in which the left optic nerve was atrophic, and in which an atrophy of both optic tracts, recognizable through a thinning, could be demonstrated macroscopically. A microscopic examination had not been made. Donders said in the discussion following that he had owned a similar preparation, and Hirschberg added that Morgagni had already described two such preparations. In 1877, at the same congress, I was able to demonstrate two cases in which the left optic nerve had for many years been atrophic; the right tractus was considerably thinner than the left, but the latter also showed an undoubted atrophic condition which was demonstrated with the microscope. On account of these observations I came to the conclusion that the crossed fibers are more pronounced than the non-crossed fibers, so that, consequently, the expression "semi-decussation" can only be accepted *cum grano salis*—an opinion which has been fully sustained by later investigations. Since then a great number of similar preparations have been presented for examination (Baumgarten[9], Kellerman[7], Becker[8], von Gudden[3], Marchand[12], Purtscher[17], Singer and Münzer[34], Bernheimer[4], Burdach[35] and others). Recently, I again had in Heidelberg opportunity to produce a very convincing preparation made by Cramer, in which the atrophy could be traced on both sides as far as the fissura calcarina. Henschen, in his classic, "Clinical and Anatomical Essays," goes even so far as to say that he who does not believe in a semi-decussation "would do best not to waste his time in working with brain anatomy." The proof of a semi-decussation is in addition demonstrated in other ways. Bernheimer[4] has found in his studies of the development of the medullary sheaths in the chiasma of immature, mature and hypermature human embryos, a method by which with Weigert's staining he could trace the developing medullary sheath of the single fibers in continuous serial sections in its course from the tractus into the opticus. The non-crossing portions of the fibers are more plainly seen in the superior dorsal half of the chiasma. Supplementing the examinations, and of equal significance, are those cases in which an atrophy originates in the brain and continues through one tractus, causing partial atrophy in both optic nerves. Cases belonging to this class were first published by Monakow[22] and Siemerling[18]; I[19] have reported a particularly interesting case imitating in man somewhat Monk's experiments concerning the center of vision in the cortical portion of the occipital lobe.

A 33-year-old man received a complicated splintered fracture of the posterior portion of the right parietal bone from a spade blow. As soon as the injured man regained consciousness he noticed a disturbance of vision in the right eye; the left one had been blind since infancy. At the examination the next day in the clinic a left-sided hemianopsia was proven. During the course of recovery a brain abscess with formation of fungus growth occurred. The pus was emptied and the fungus removed. A transient paralysis of the left arm and leg followed. At last a cure was effected and the man resumed his work. Central vision remained normal, the hemianopic defect also remained. Five years after the injury, the patient died of pulmonary phthisis. The post-mortem examination showed only the extreme point and the temporal convolutions of the meningeal lobe intact. Examination of the right opticus made by me demonstrated partial centrifugal progressing atrophy, which at the same time revealed the situation of the non-crossing nerve fibres.

Ascending atrophy caused by an atrophic opticus has also in individual cases explained the course of the fibers of the tractus. Cramer, for instance, in his case reported above where the right opticus was atrophic, found: 1. A degenerated bundle in both optic tracts. 2. A reduction of the corpus geniculatum externum to ⅔ with marked cellular shrinking. 3. Anterior quadrigemina on both sides, impoverished in fibers and in cells—more marked on the crossed side. 4. Lateral medulla of the pulvinar less developed on the right. 5. Affection of the fissure calcarina on both sides. The cortex under the line of Genari was involved. No shrinking of fibers, but dimunition in the number of cells in the layer immediately beneath the line of Genari, and in the deepest layer of the cortex. Henschen[10] in one case of destruction of the exterior corpus geniculatum also traced the atrophy into the occipital lobes backward, and into both optic nerves forward. The investigations of Leonowa[194] demonstrate changes in the optic centers explained by means of a semi-decussation. On account of the foregoing facts the partial crossing of the optic fibers in the chiasma is without doubt demonstrated. It is—even omitting clinical observations entirely proven anatomically—i. e., anatomopathologically.

The reason that we cannot expect a confirmation from normal anatomy, is that the crossings in the chiasma are so complicated that without partial atrophy of some fibers, or without examining the first developing medullary sheaths in the embryo, it is impossible to trace the fibers with exactitude. Therefore, the wish of Kölliker's to see in one section the uninterrupted course, purely anatomically, of non-crossing nerve-fibers in men, can hardly be fulfilled, because investigations, especially Bernheimer's, have shown plainly that they do not lie in one plane.

In examination of the chiasma and tractus certain commissural fibers passing in the region of the tuber cinereum under the third ventricle must be separated from those of the optic nerve itself. Meynert's and Gudden's commissures here must be particularly remembered. The first lies dorsally above the chiasma; the fibers pass on both sides backward to the middle third of the crura, partly to the lenticular nucleus and are probably connected with the nucleus amygdalatum lying under the optic thalamus. The fibers of Gudden's commissure take the same course as the fibers of the optic tract and are interlaced with them; they connect the two corpora geniculata interna and the quadrigemina posterior, and send one bundle into the coronal fibers on the same side. In atrophy of the optic nerve fibers they remain intact (Darkschewitsch). Numerous investigations, partly contradictory, have been published in regard to the connection of the tractus with the central organ. It is certain that the optic fibers are connected with: 1. The corpora geniculata externa. 2. Corpora quadrigemina anteriora. 3. The pulvinar of the optic thalamus. From these primary ganglia of the optic nerve, fibers pass to the posterior leg of the internal capsule (between the corpus geniculatum and optic thalamus) and from there as Gratiolet's optic radiation with the coronal fibers to the cortex of the occipital lobe. According to Henschen,[10]b the principal bundles of optic nerve fibers pass from the external corpus geniculatum—(although fibers from the optic nerve go into the pulvinar and into the anterior corpus quadrigeminum they do not appear to convey direct impressions of vision; relative to the pulvinar, contradictory post-mortem observations have been published)—through the so-called occipital optic tract to the fissura calcarina on the same side (fissura occipitalis horizontalis, Henle; fissura hippocampi, Gratiolet). The latter passes horizontally below the cuneus in the median portion of the occipital lobe; in the cortex of this, according to Henschen, the optic center is situated and in such a manner that the upper lip of the fissure contains the endings of the fibers for the upper half of the retina, and the lower lip those for the under half. At the bottom of the fissura, anteriorly, the fibers for the macula lutea terminate; posteriorly to the same are situated those for the retinal zones lying to the left and to the right. In this manner a regular projection of the peripheral portions of the retina to the cortex of the fissura calcarina is produced —a projection which could well be designated as a "cortical retina." The cortex of the fissura calcarina is distinguished from all others, particularly from that of the lateral uppermost layers of the occipital lobe by the fact "that there is found between the strata of the larger and smaller pyramidal cells a special 'molecular stratum (Meynert), the cells of which have no pyramidal processes but whose axis cylinders radiate their processes vertically toward the medulla. These cells are contained in the Vicq d' Azyr stratum." Each macula should be represented in the field of vision of both hemispheres. The center for perception of colors should also be found there. Landolt's theory that there is a special center for the color sense in the ventral portion of the occipital lobe cannot be confirmed.

Henschen[10]c demonstrates moreover by a large number of cases that all parts of the occipital lobe as far as the fissura calcarina can be destroyed without visional disturbances occurring, but if this fissura be injured such disturbances are never absent. Cases of cerebral hemianopsia in which the fissura is found intact can be explained in this way: the destructive process progresses below the cortex deep down in the white matter and there affects those bundles of fibers which pass to the fissura.

The small localization of the true center of vision does not indicate that the rest of the cortex of the occipital lobe is not of importance in the physical process of seeing. The central field for optic reminiscence pictures under no circumstances coincides with the center of vision. The recent investigations of Flechsig[179] confirm *in toto* the course of the fibers as above given. Flechsig found in the brain of a child born at natural term medullary fibers corresponding to the optic tract already developed: bundles of fibers from the external corpus geniculatum to the occipital lobe and from the optic thalamus to the internal part of the occipital lobe (region of the fissura calcarina), while in an eight-months-old fœtus only the tracts from the nuclei of the posterior columns of the medulla oblongata to the optic thalamus, the lenticular nucleus and the internal capsule existed—tracts designated for the muscular and touch sense which later continue to the central gyrus. The tracts of association between these and the spheres of vision and hearing develope comparatively late.

According to Nothnagel the first occipital gyrus about corresponds to the center for perception of visional impressions, while the remaining occipital cortex, he claims, corresponds to the center of memory.

Vialet[62] claims that the center for vision has a large area; it comprises all of the cuneus, the lobus lingualis and fusiformis. From exact anatomical studies this author also gives the location of the association bundles which connect the different portions of the cortex with each other. The fibers which connect the fields of vision in the right and left hemispheres with each other, according to him, take their course in the most posterior part of the corpus callosum.

In regard to the location and organization of the optic bundles within the temporo-parietal lobe, Henschen says that the optic tract lies in a plane 6 and 7 cm. distant from the occipital point as a closed bundle on a level with the second temporal convolution and the adjoining sulci, particularly, perhaps, of the sulcus temporalis secundus. The parietal cortex does not belong to the center of vision.

The whole optic tract from the bulb to the center of vision in the fissura consists anatomically, according to Henschen, of two parts (neurons). The anterior neuron is composed of the large retinal ganglion cells and of the nerve threads which proceed backward from these and constitute the optic nerve; these threads branch in the corpora geniculata into neuropilems. Here the ganglion cells of the second neuron which send their fibers through the occipital optic tract into the cortical optic-centers lie.

Because in section or degeneration of the optic nerve in a grown person, in addition to degeneration of the retinal ganglion layer also a group of ganglion cells in the superficial gray matter of the anterior corpus quadrigeminum degenerates, especially upon the opposite side (Monakow), some authors believe that from here axis-cylinders passing centrifugally are also present in the optic nerves; these, according to Wilbrand's view, influence the production of the visional substance (assimilation process of the retina, Hering).

The cortex of the parietal lobe is connected with the optic center by a system of association fibers which lies closely below the gray substance. All lobes of one hemisphere are connected with each other by means of fiber-tracts passing deep in the medullary substance.

The anterior corpora quadrigemina are connected with the optic thalamus by numerous fibers which cross in the roof of the aqueductus Sylvii and pass through the lemniscus (Wernicke). The posterior corpora quadrigemina are also connected with each other as well as with the internal corpora geniculata by means of Gudden's commissure: the latter moreover sends a bundle of fibers into the corona radiata and into the fillet.

Stilling[33] has also followed the tractus fibers as far as into the medulla oblongata. They pass close in front of the corpora geniculata externa into the pedunculus cerebri on the superficial surface of which they spread out like a fan and then pass into the pons. Recent observers though (Angelucci) have not been persuaded of this.

Concerning the location of the nerve fibers which supply different regions of the retina we are now quite well informed; opinions concerning their location in the chiasma or tractus, however, differ greatly. I will remark here that microscopically two kinds of fibers are recognizable in the opticus: thin ones and thick ones; the first are supposed to be fibers for conducting visual impressions (optic fibers), the others those which cause reflex pupillary action to light.

For knowledge of the course of the macula fibers we are indebted to Samelsohn[23] who demonstrated the situation of these by an atrophy occurring in a case of central scotoma. His results have been confirmed by later observers (Bunger[32], Nettleship[29], Vossius[30], Uhthoff[24], Schmidt-Rimpler[181]). The macular nerve bundle does not preserve, as was formerly believed, its geometric position inside of the opticus but changes it: in the foramen opticum it lies in the center of the trunk, later it leaves this position and winding sideward constitutes close to the bulbus a more temporal section, the base of which lies in the periphery, while the apex looks toward the center. We have also been informed—by my investigations mentioned above—of the position of the non-crossing bundles: these occupy in the foramen opticum the entire under periphery, a large part of the nasal, and only the lowest part of the temporal. After the entrance of the vessel it lies more on the upper and lower periphery, projecting particularly from under more toward the temporal side. In the cases of Uhthoff[24], Jastrow[25] and Siemerling[18], already reported, a pure hemianopsia was not present: in Uhthoff's case the atrophy affected the outer and under quadrants of the retina; here the position of the fibers is

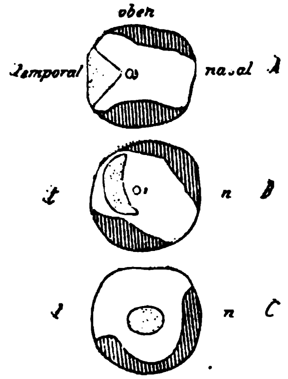


Fig. 1. Cross Section of Optic Nerve.

in accordance with my investigations. Henschen also confirms this. The position of the different fibers would, therefore, be about such as the schematic drawing in Fig. 1 indicates. In the intra-cranial opticus trunk, which assumes a horizontally oval form, the macular fibers remain as an oblique oval; nearer to the chiasma they bend a little outward. Anteriorly in the chiasma they occupy a similar position; in the middle of the chiasma the bundle of fibers approaches the central axis, and posteriorly they lie in a dorsal position. In the tractus again they occupy a central position (Uhthoff).

The course of the non-crossing fibers is described by Henschen. He says that in the most posterior portion of the optic nerve they lie immediately upon the latero-ventral part in the form of a crescent-shaped bundle, which sometimes, however, extends more toward the middle than laterally. In the chiasma the bundle occupies a centro-dorsal part of one-half of the chiasma and extends toward its central line; laterally it projects into the periphery. This agrees with Bernheimer's observations. In the tractus the non-crossing fibers lie dorso-centrally.

The crossing fibers should occupy in the most posterior portion of the opticus a dorso-median position, and in the tractus assume a ventro-median one. The crossing and non-crossing bundles should as far as the corpus geniculatum externum have completely separate courses. Even if in general these determinations of position are correct there are, however, without doubt, many individual deviations—as has been proven by different investigators (Wernicke, Siemerling, Uhthoff).

## FORMS OF HEMIANOPSIA.

According to the above we will seldom be in position from defects of the field of vision, even if both eyes are affected in a hemianopic manner, to locate with any exact certainty the seat of the local process within the cranium—as soon as disturbances in the cerebral portion of the opticus and of the chiasma are present. Former suppositions based upon the following diagram have, therefore, only a conditional value, although according to the investigations of Henschen above reported the crossing bundles in the opticus and in the tractus adjoining the chiasma have a median position—similarly as shown in Fig. 2.

In this figure the left tractus is drawn with interrupted lines as well as the retinal portion supplied by it, and the field of vision belonging to it; the crossing bundles are drawn heavier. In a similar manner the right tractus and its projections are designated by punctate lines. The position of the eyes is supposed to be with the optic axis parallel, the macula lutea looking toward the central point of fixation (F). The nasal field of vision is 55° in the horizontal meridian, and the temporal 90°. Of course, these determinations are only approximate and subject to individual change, but in variations of from 5° to 10° when no other findings contraindicate it they can be considered as being within the physiologic limits.

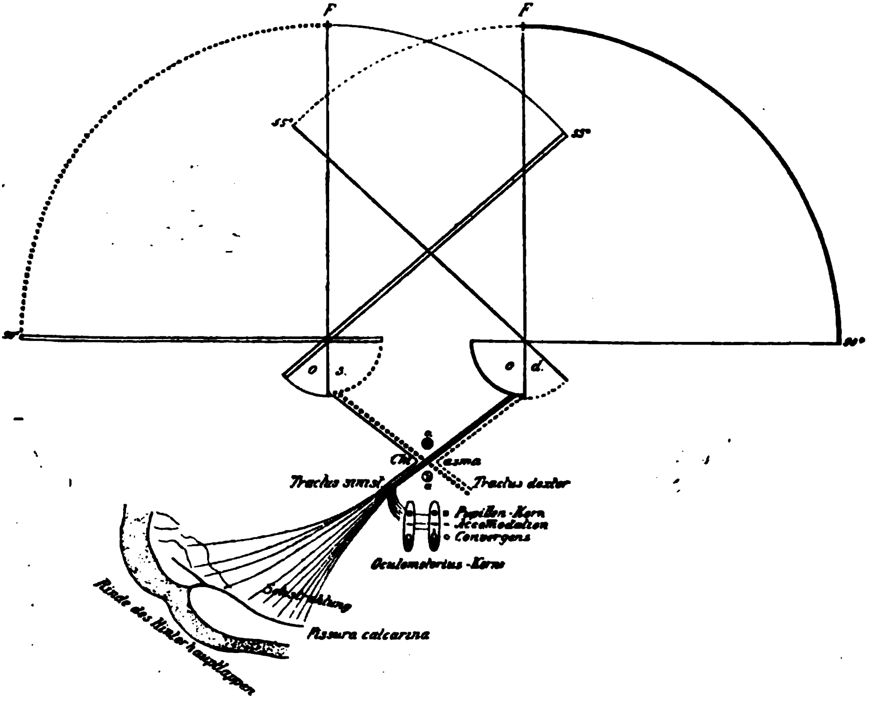
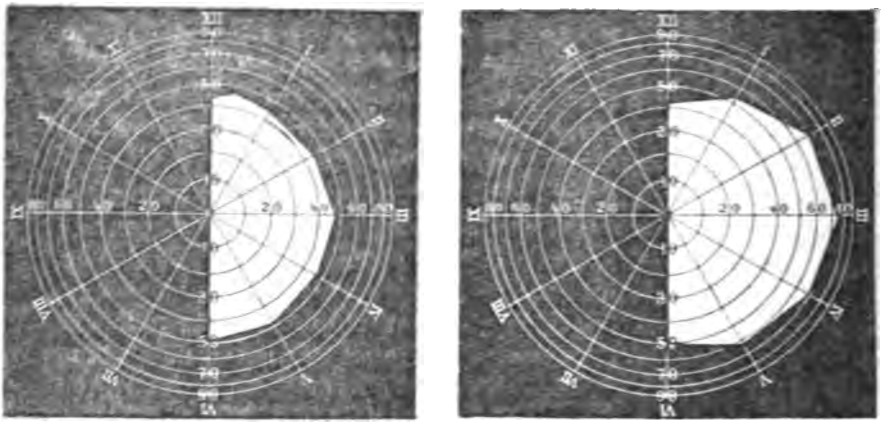


Fig. 2. Course of the Optic Nerve Fibers and Visual Field.

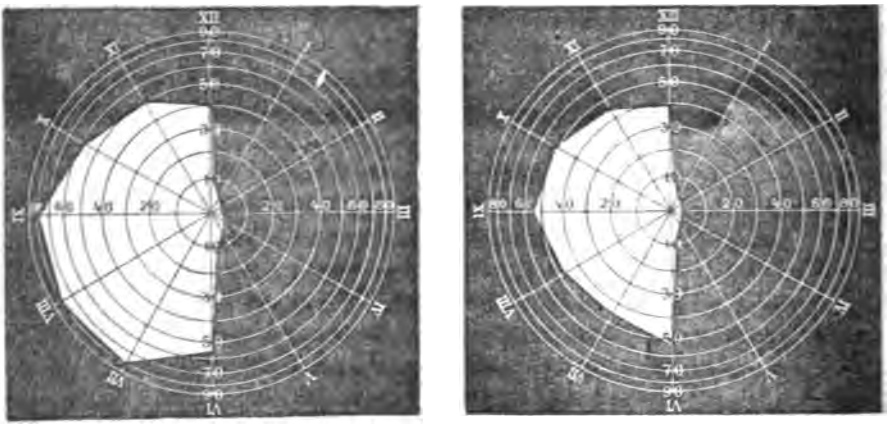
According to the above figure the right tractus supplies the nasal half of the retina (estimating from the macula) of the left eye, and the temporal side of the right eye:

consequently in destruction of the left half of the visual field in each eye would be absent (hemianopsia sinistra). The left tractus supplies the temporal half of the retina of the left and the nasal half of the right: so in destruction of the right half of the visual field in each eye would be absent (hemianopsia dextra). These forms of hemianopsia are designated as homonymous; they are generally the most frequent. Cases of heteronymous hemianopsia, however, are observed, for instance, such cases in which on both sides the temporal fields of vision are absent (the



Left Eye. Right Eye.

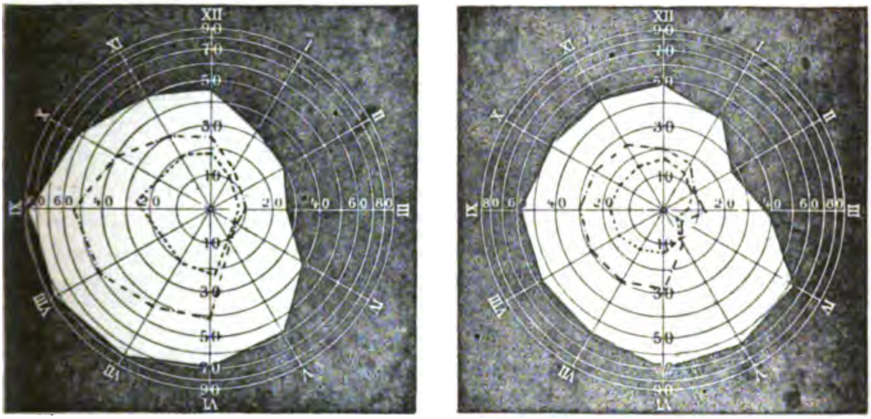
Fig 3. Hemianopsia homonyma sinistra.



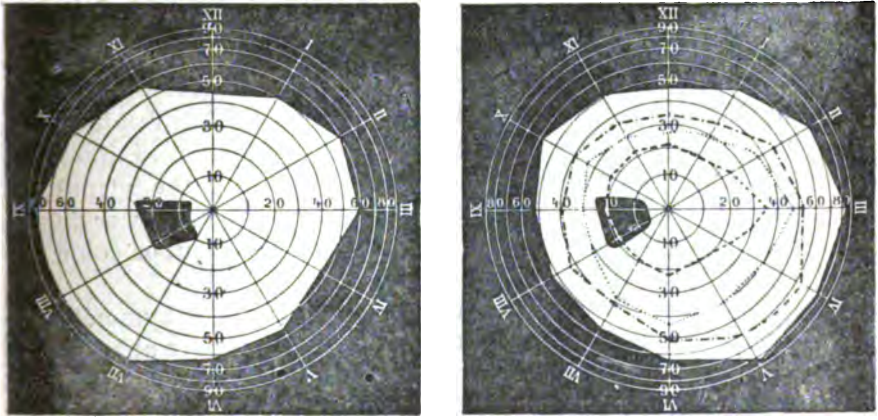
Left Eye. Right Eye.

Fig. 4. Hemianopsia homonyma dextra.

patients go around apparently with blinds on. Hemianopsia temporalis s. lateralis). These could be explained, for instance, through a tumor lying in the anterior or posterior angle of the chiasma (see in Fig. 3), pressing upon the median sides of the optici or of the tractus and conse-



Left Eye. Right Eye.
Fig 5. Hemianopsia homonymadextra incompleta.



Right Eye. Left Eye.
Fig. 6. Symmetrical hemianopic defects.

quently upon the crossing bundles; of course in this manner perfect hemianopsias would hardly be produced because other fibers also would be destroyed.

When both nasal halves of the field of vision are absent (hemianopsia nasalis) the explanation is more difficult because, according to the above diagram, we would be compelled to suppose an interruption present in both lateral angles. This would produce if we accept Wernicke's diagram (Fig. 9) which is different as our basis, temporal hemianopsia.

Hemianopsias produced by central causes in which the lines of section are not vertical but are horizontal seldom occur. Defects in the field of vision, resembling in form the defective fields of vision seen in hemianopsia, are occasionally met with—as previously remarked—in neuritis, or in optic atrophy and can be bilateral or unilateral. They can also be produced by external causes: I have seen, for instance, temporal hemianopsia of the right eye in a right sided pulsating exophthalmus when an aneurysm of the right internal carotid with the sinus cavernosus was present.

In general it is supposed that the true lateral hemianopsias, as a rule, are only met with in lesions involving the tractus, the connection between the tractus and the cortical optic center, or of the center itself. In these complete hemianopsias the central vision is intact; the line of separation passes—as shown in Fig. 3—corresponding with the vertical meridian, from above downward exactly through the point of fixation; or in proximity to the point of fixation; or along the whole course of the vertical meridian a small visual field zone (about 2°-5°) is retained which extends into the lateral defect (Fig. 4). In other cases is included in the vertical section of the visual fields a zone in which a certain change of visual power is demonstrable—diminution of the eccentric vision, or color blindness.

Cases are also often seen in which only larger symmetrical portions of the visual field in both eyes are absent: they can occupy the whole periphery of one of the fields of vision (Fig. 5). Here acuteness of eccentric vision in the retained portion of the defective halves of the visual field is diminished. In other form of incomplete hemianopsia only a small symmetrical part in the middle of both halves of the fields of vision is absent (Fig. 6). Moreover, it has been observed that on both sides one half of the field of vision, except a small portion adjoining the macula can be absent; that this, however, is not intact is shown by the loss occasionally of color sensation in it. In addition there can be absent in one eye only the sense for color while in the other eye a complete defect in the homonymous half of the visual field is present.

Homonymous hemianopsia for colors—hemiachromatopsia—has also been observed (Charpentier,[113] Samelsohn,[23]b Eperon,[114] Verr,[117] Schwanzy,[115] Wilbrand[14]a, Scoeler,[116] Bjerrum,[36] Holden[150] and others). In other cases light sensations were still present in the hemianopic halves of the visual fields while the recognition of forms was impossible.

## ORIGIN OF THE DIFFERENT FORMS OF HEMIANOPSIA.

If, as sometimes occurs, also the intact halves of the visual field show a contraction, then must a simultaneous affection of the other cerebral hemisphere and of the other tractus be supposed, if a simple functional disturbance of the other center of vision be not present.

But a concentric contraction must not be immediately diagnosed if the intact visual fields do not correspond exactly with the usual diagram of the limits of the field of vision. The borders of the visual field do not have a small physiologic latitude; it is exactly as with the supposed "normal" central vision. With $V=3/4$ instead of $V=1$—if other symptoms of disease be absent—one might as well speak of amblyopia as to speak of a pathologic concentric contraction in a contraction of the visual field of from 5°-10° (in some cases when the contraction is even greater). It often happens that the peripheral borders differ to a great extent in repeated examinations. Consequently I do not think it correct when Foerster, in the case of right-sided hemianopsia, reported on page 75, speaks also of a concentric contraction of the intact field of vision in the left eye. Sometimes the respective limits varied greatly, and then the contraction, corresponding with the diagram, was only about 10°; in general the field of vision of the right also showed this defect, as the picture drawn by Wilbrand[14]c reveals. Finally the post-mortem demonstrated that there was no lesion of any kind present which could influence the intact field of vision.

In order to explain the imperfect forms of hemianopsia, especially the absence of symmetrical defects in the field of vision, we must believe that those nerve fibers which supply identical portions of the retina—that is, respectively the homonymous and the crossing fibers end near one another in one place in the optic center, a fact demonstrated by Henschen's investigations. Schemata of the cortical endings which do not take this into consideration —as those advanced by Wernicke[21] and Jatzow[25]—are not satisfactory, because in a separated position of the respective fibers in the brain in regular symmetrical defects of the field of vision, two circumscribed seats of disease which affect equally the crossing and non-crossing fibers would have to be supposed. We have seen, however, that in a sense there are exceptions, in that half of the field of vision in one eye can be more affected than that of the other; for instance the half of the retina which is supplied by the crossing fibers of the optic nerve has only the color sense absent, while the one supplied by the non-crossing fibers is entirely absent.

For the explanation of these observations the most probable theory is that the fibers which supply identical parts of the retina gradually approach one another in their course to the cortex before they lie next to each other, or also before they come together in the cortical optic center. When a lesion is present somewhat under the latter, then the crossed and the uncrossed fibers can be affected in varying degrees: there would, however, always be symmetrical defects in the fields of vision.

As central vision in true forms of hemianopsia always remains normal—if it be otherwise a complication must be thought of—it must consequently be believed that both hemispheres supply in a satisfactory manner both macula. But as in many cases also those parts adjoining the macula, and the whole vertical meridian of the otherwise defective half of the field of vision remain able to functionate, while in other more rare cases a vertical line of section exists, and also occasionally above or below, the defect projects over the vertical into the intact field of vision, there must be individual differences present which explain a more or less extensive connection of the retina with one or the other cerebral hemisphere. In general one half of the retina is supplied by one tractus; the other by the other tractus, without this supply corresponding mathematically with the exact line of meridian section. This appears to be really satisfactory, even as if nature had depended in distributing her nerve fibers entirely upon the perimetric determination of the visual field, although even the smallest rotation of the eye would again destroy this exact harmony and cause a deviation of the halves of the fields of vision from the vertical meridian of the perimeter. But on the other hand experience has taught that in hemianopsia the fixation point always lies in the seeing half of the visual field, consequently from this we must conclude that it is supplied by both tracts, as then only can it be explained why it—in contradistinction to those parts of the retina lying above or below it in the vertical meridian, and where an individual difference is so plainly visible—never lies inside the defect. The physiologic importance of this point, as well as the anatomic size of the macula bundles, give additional support for the theory of a double supply here from both hemispheres.

Foerster's[73] hypothesis that the central field of vision remains intact because the respective points of origin of the macula fibers in the occipital lobe are supplied with nourishment by numerous anastomoses from two or more vascular circles cannot be confirmed by facts, as also in cases of lateral hemianopsia caused by trauma, central vision remains intact. Also in double sided cortical affection (see Foerster's and my case below) in the beginning complete blindness was present; later on, however, a small central field of vision again appeared. Wilbrand also opposes this opinion from clinical histories of patients, together with post-mortem examinations. The opinion of Foerster that in those cases, in which the line of section passes directly through the point of fixation and does not project in it over to the blind side, are not to be considered cortical hemianopsias, but that the lesion should be sought for in the tractus, is also untenable. This fact, however, seems indeed certain—that those regions of the cerebral cortex which are connected with the macula possess a particular resistance.

Another difficulty is that in complete hemianopsia the defect is considerably larger upon the temporal side of the visual field than upon the nasal side: the temporal field of vision. supplied by the crossing bundles of fibers, extends for instance in the horizontal meridian to 90°, while the nasal only extends to 55°. If we project one field of vision upon the other then the temporal extends over the nasal in a crescent shaped zone. On account of this Wilbrand, in his diagram of the distribution of fibers in the cortex, has supposed also a special field for the fibers of the crossing bundles supplying this peripheral portion. He differentiates: 1. the region of bilateral supply of the macula and of the vertical meridian of the field of vision; 2. eventually a region for those parts of the field of vision which lie in close proximity to the macula and the vertical meridian, and which as we have seen in some cases of hemianopsia remain able to functionate; 3. the region of the mixed fascicle field (intermediary field of vision). Here he supposes something similar to a chess board, where the white field lies close to the black, the fibers which supply identical points in both retinæ lying in close proximity at their cortical end, an opinion which in a similar form we also have above supported; 4. a peripheral region for the fibers of the crossing bundles which corresponds to the peripheral crescent-shaped zone of the temporal field of vision.

The latter appears to me to be superfluous in that if one supposes with Wilbrand a pronounced cortical difference of position, then it would be possible that in disease of the optic center cases could occur in which this region would not be co-involved. We would then have a complete homonymous hemianopsia in which, however, the peripheral zone of the temporal field of vision would be retained. Cases of that kind do not occur. According to my opinion, this zone can coincide with the one corresponding with the intermediary fibers if it be supposed that the retina of the temporal half of the bulb is originally to the same extent capable of visional perception anteriorally as the nasal, and is also in a similar manner connected with the cortical centers, but that finally by not functionating the peripheral temporal portions suffer loss of visión. That in general the peripheral temporal portions of the retina which apparently are blind (for white balls) in examination with the perimeter, are in reality not so, demonstrates Schweigger's observation that by using stronger light irritation the field of vision is considerably larger inwardly than is usually supposed. The absence of use of the most peripheral nasal field of vision can be explained in this way: at first the back of the nose causes mechanically a contraction of the field of vision, and also that part of the field of vision is seen simultaneously by both eyes, while the most peripheral temporal field of vision to the right or to the left is only seen by the one respective eye.

We can, therefore, suppose, also, for these parts of the retina, no longer functionating, originally, a similar nerve fiber connection with the central organ, and also the termination of these in the same place in the cerebral cortex as the place where the fibers of the crossing bundles, coming from identical points in the nasal half of the retina of the other eye terminate.

In local lesions between the tractus and the cerebral cortex—see later an exception reported by Henschen—only complete or incomplete hemianopsias are present: the latter are present where there are symmetrical (coinciding) homonymous defects of the field of vision. That an amblyopia, or an amaurosis of the other eye can be caused in this manner, is not supported by any facts. Gowers[28] has, however, cited a case reported by Demange in which a woman had a perfect anesthesia of the left half of the body (mucous membrane also) extending to the median line, and also amblyopia and loss of color sensation in the left eye; later paresis of the left extremities occurred. Section showed an extensive circumscribed softened spot occupying a large portion of the superficial convex surface of the right hemisphere and the underlying white substance: the median superficial surface, central ganglia, and capsule were not involved. Gowers concludes from this that, in or near the gyrus angularis, higher than the hemianopic center lies, an optic center exists in which the whole field of vision of the opposite side is represented. He supposes that the connecting fibers pass through the corpus callosum. Wilbrand has called attention to the fact that in this case an hysterical amblyopia was present. The same is true of the observations published by Charcot. The latter describes as cerebral hemianesthesia that complex of symptoms caused by interruption of conduction in the fibers of the posterior portions of the internal capsule *(carrefour sensitif)*. It can, as hysteria, be simply functional—without organic changes. Unilateral paralysis of sensation in the extremities of the opposite side, on the trunk or on the head, occur; simultaneously paralysis of taste, of hearing, of smell and of vision. Consequently a case of mixed amblyopia and amaurosis would be present, while according to what is said above, there ought to be an homonymous hemianopsia. Charcot attempts to sustain himself by advancing the hypothesis that the non-crossing bundles in the chiasma effect later a crossing in the region of the corpora quadrigemina. This, however, contradicts a certain fact, that in the cortex of the occipital lobe half of the retina of each eye is represented. Grasset's diagram is more acceptable: according to it, the non-crossing bundles of the optic nerve fibers cross each other once before and behind the carrefour sensitif. Also according to it the generally accepted distribution and representation of both retinal halves in the cerebral cortex is realized while in the carrefour sensitif a circumscribed point could cause in addition to the hemianesthesia of the other side also a contralateral amblyopia.

At present, however, cases of this kind, proven with certainty, which exclude other explanations, apparently do not exist. The observations in hysterical cases naturally do not come into consideration: these are, even if intended deception could be excluded, not suitable to draw conclusions from regarding normal nerve condition. It must also be added that even if Charcot's hypothesis be accepted, these observations cannot be explained. As Landolt, who examined Charcot's patient, declares, there is present in hysterical hemianesthesias not only an amblyopia and concentric contraction of the eye on the respective side, but a concentric contraction of the visual field, at least for colors, also upon the intact side. According to this a second lesion of the other cerebral hemisphere would have to exist. But in examining hysterical patients with regard to acuteness of vision, field of vision and color sensation, we also make other discoveries which cannot be explained by any theory which in the least accords with physiologic facts.

Charcot's supposition that in each cerebral hemisphere there exists an optic center for the eye on the opposite side was apparently supported by investigations made by Ferrier. He found that destruction of the gyrus angularis (lying in front of the occipital lobe) in a monkey, produced blindness of the opposite eye, but only transient, if the gyrus angularis of the other hemisphere remain intact, because an early compensation is produced by this. H. Munk to whom we are indebted for the first experimental investigations concerning the character and location of the center of vision in the occipital lobe could not, however, confirm this observation—neither could Luciani nor Tamcurini. The latter saw a transient hemianopsia appear, the origin of which Munk, who denies any connection existing between the gyrus auguralis and the retina, attributed to contusion and inflammation of the adjoining parts.

It is a confirmed fact that if a lesion affect one tractus, its cerebral connection with the cortical center of vision, or the latter itself, a complete or incomplete homonymous hemianopsia is the result. A crossed amblyopia or amaurosis cannot be produced by disturbance in one hemisphere. Much more probable is a simultaneous disturbance of vision in the following manner: that by the diseased hemisphere, pressure (from a tumor for instance) is exerted upon the opticus passing under it, or that the opticus itself is involved in the diseased process. Furthermore, it must be remembered that often, in the beginning of local processes extensive reflex symptoms often exist which disappear after awhile. So it would be possible in this way that in a minimum lesion of the cortical visual center in one hemisphere a reflex action could be produced in the other hemisphere and thus momentarily a total blindness appear from which later an homonymous hemianopsia develops.

There is still another source of error which might mislead us into believing that a diminution of central vision existed. In a number of patients in addition to hemianopsia, complete amnesic (sensory) aphasia is present, or at least the patients have forgotten the character and significance of the individual letters they see. For instance a patient examined by means of the usual test cards (Latin letters and afterward numbers) claimed that he saw all of the letters plainly and that they were all "A" in the different rows—in the test with numbers he called the same number all the time. Consequently if it had been desired to determine the amount of vision it would have been necessary to suppose a marked amblyopia. But because he had been able to count, he was tested with dots (Burchardt's test for vision) and it was possible, with all his nervousness, to see that he had more than half central vision in his hemianopic state. It was remarkable that he could no longer recognize letters, but when dictated to he wrote quite correctly. His good vision could also be proven in the following manner: that he be allowed to trace with a pencil any small letter which he had called incorrectly. This he could do with ease. There existed simultaneously in the patient right sided hemianopsia and a slight right sided hemiparesis.

## CEREBRAL HEMIANOPSIAS.

Cerebral hemianopsias are caused by disturbances in the cortical center (cortical hemianopsia), in Gratiolét's optic fibers as far as the internal capsule leading to it (subcortical hemianopsia), or also by lesions between the tractus and the fibers of the optic nerve, i. e., disturbances in the basal opticus ganglia. Of the latter it appears that only those of the pulvinar of the thalamus opticus are of significance in seeing; it is best to differentiate these from other central hemianopsias. The affection can exist in all of the above described forms of complete or incomplete homonymous hemianopsia depending upon the extent of the lesion present.

Hemianopic destruction of the color sense must be regarded as a result of a minor disturbance of the respective fibers; usually, however, it is as a rule combined with disturbances of vision (i. e. of eccentric vision) similarly as we observed in the central color scotomata in neuritis, and as Bjerrum[36] has also demonstrated. The hypothesis of an especial optic center for color (Wilbrand[14]) is unnecessary. Also in this relation it would be very difficult to explain that in disappearing hemianopsias often a small region remains slightly weak for vision respecting the sense for light and color. In supposing separated localities in the brain for the space, color, and light senses, as Wilbrand desires, then according to him the lesion left as able to functionate only the exact symmetrical portions of these parts lying separated.

A case reported by Verry[78] is not convincing. Complete right sided hemiachromatopsia with diminution in central vision was present, and space and light sensation in the respective halves of the visual field were diminished. Section revealed in addition to recent apoplexy in the ganglia of the cerebrum, an old hemorrhagic cyst in the under part of the occipital lobe. It is not clear why by this, only the region of the central color sense should be affected because also the sense for light and form were diminished. Schoen in an article in Nagel's "Annual Reports" for 1888 states that a neuritis of the left tractus with ensuing atrophy (the examination is not reported) would make easier an explanation of the complex symptoms of the case.

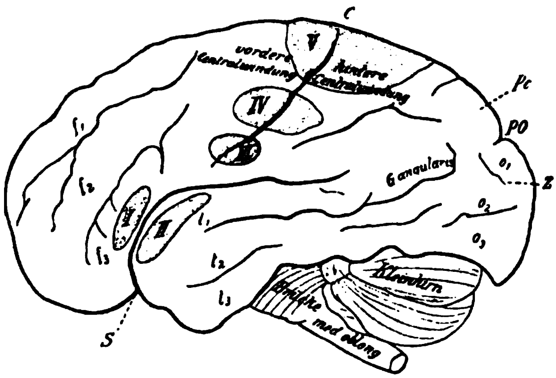


Fig. 7. Outer surface of the right side of the brain.

$f_1$ First frontal convolution. $t_1$ First temporal convolution. $o_1$ First occipital convolution. $f_2$ Second frontal convolution. $t_2$ Second temporal convolution. $o_2$ Second occipital convolution. $f_3$ Third frontal convolution. $t_3$ Third temporal convolution.

*C* Median fissure (Fissura Rolando). *Z* Cuneus. *Pc* Præcuneus. *PO* Fissura parieto-occipitalis. *F* Occipatilis perpendicularis. *S* Fossa Sylvii. *I* Motor-speech center. *II* Sensory speech center. *III* Facialis center. *IV* Arm center *V* Center for the leg of the oposite side.

The complications which accompany central hemianopsias are varied: they are conditioned either by simultaneous lesion of adjoining parts of the cerebrum or by reflexes. Special experimental examinations have to be made in order to explain their significance.

Irritations of the occipital cortex can cause conjugate movements of both eyes toward the opposite side (Munk, Schaefer and others). Irritations of the two central convolutions (Hitzig and Fritsch, Ferrier, Nothnagel) and of the paracentral lobes,produce contractions of the muscles of the face, the neck and of the extremities of the opposite side, while in destruction of the respective parts paralysis appears.

According to Hermann Munk's investigations, destruction of the motor centers referred to above is always associated with disturbance of sensation (sensory sphere).

The motor centers on the side of the fissure of Rolando follows one another from above downward in succession so that uppermost is situated the center for the leg upon the opposite side, then the one for the arm, then for the facialis and at the bottom upon the fossa Sylvii lies the one for the hypoglossus. Bordering upon this last, and situated a little anteriorly in the third temporal convolution (Broca's Zone) of the left hemisphere is the motor, and posteriorly from the fossa Sylvii in the first temporal convolution, is the sensory center for speech. (Wernicke.) All of these determined functions of the brain cortex were originally observed from experiments upon animals, but have also been confirmed through clinical observations. We find also in cortical hemianopsia, contralateral hemiplegia, but as a rule associated with simultaneous lesions elsewhere. For instance in the twenty-first case of Henschen in addition to right sided hemianopsia, right sided

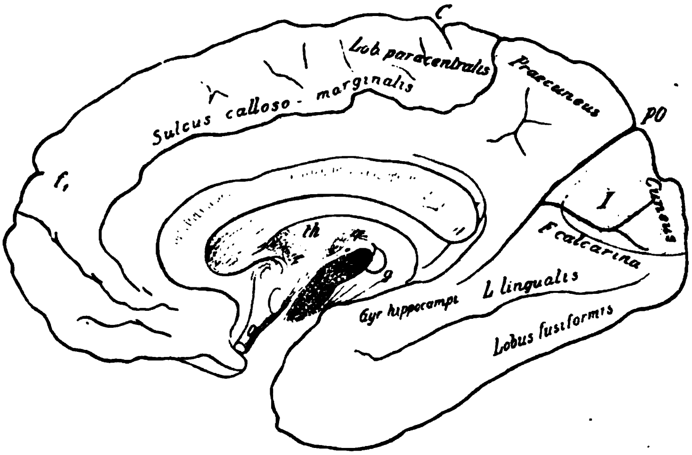


Fig- 8. Inner surface of the right side of brain.

*C* Median fissure. *PO* Fissura parieto-occipitalis perpendicularis upon its horizontal portion the fissura parieto-occipitalis horizontalis. (*F* Hippocampi) $f_1$ First frontal convolution. *th* Thalmus opticus. *o* Opticus. *q* Corpus quadrageminum. *g* Corpus geniclatum laterales. *I* Center for vision.

hemiplegia and aphasia; the post-mortem showed circumscribed softening in the left occipital lobe, in the internal capsule, and in the frontal radiation. Case twenty-three showed right sided hemianopsia and right sided hemiplegia with softening of the bottom of the left fossa calcarina and in the left frontal lobe. In another case by Foerster and Wernicke in the "Graefe-Saemisch Handbook" a right sided hemianpsia with motor aphasia existed. Later also paralysis in the right half of the body occurred. Post-mortem revealed an embolus in the left arteria fosse Sylvii, a necrotic area in the cortex of the occipital lobe from which an induration extended deep into the white medullary substance, and also necrotic areas in the cerebral hemispheres.

Cases of hemianopsia with convulsions have even been observed. Knut Pantoppidon[137] observed in a paralytic after an apoplectiform attack with hemiepileptic convulsions, hemianopsia ensued which lasted three weeks; likewise in a drunkard during eclampsic convulsions, hemianopsia appeared. Koenig[138] observed left sided hemianopsia in a twelve year old epileptic girl after repeatedly recurring attacks. A disturbance of central vision was also present. Affections of the optic radiation also often show hemiplegias. For instance in the nineteenth case of Henschen there was aphasia, right sided hemianopsia, and hemiplegia in circumscribed softening in the left optic radiation and left central convolution. In case twenty there was present left sided hemianopsia, hemiplegia, and hemianesthesia in circumscribed softening in the right optic radiation.

The reports demonstrate that in right sided hemianopsia, aphasia has often been observed. Particularly remarkable is the case reported by Jastrowitz[37]. First aphasia appeared, then hemianopsia and right sided hemiplegia, paralysis of the right facial, and also a transient one of the abducens. The ophthalmoscopic findings were normal. The post-mortem revealed a sarcoma in the left occipital lobe. The intercalar ganglia (thalamus, corpus quadrigeminum, corpus geniculatum) as well as the chiasma, the tractus, and the optici were intact. From the symptoms accompanying the aphasia, which are caused supposedly by a disturbance in the third left frontal convolution no certain conclusion can be drawn as to the origin of the hemianopsia from a disease of the cortex: for instance, both symptoms were observed in a case of tumor the size of an apple in the left frontal lobe, however, in addition at the same time the left tractus was affected (Hirschberg[47]). In a case of Pooley's[39] a tumor in the left occipital lobe with simultaneous softening of the left thalamus was present.

One often observes in hemianopsia—especially in right sided—alexia usually combined with traces of amnesic aphasia (loss of pictural sound), the so affected being unable to find the proper name for the object. The latter, however, generally disappears early and there remains then only the alexia (word blindness, *cecite verbal*). Two forms of this must be differentiated: in the first, although the patient recognizes writing or printing, he can not pronounce what he sees (motor alexia): here disturbances are present in connection with the motor speech centers. In the second more frequent form the written or printed text can no longer be read, although the letters can be seen—optic aphasia and alexia. Here again two subdivisions can be made: in one the reason that reading is no longer possible is because the letters are no longer recognized in their correct form as such (blindness for letters, literal alexia). In the other variety, although the single letters are recognized and pronounced the faculty to read them is lost; here occasionally the word is made out by spelling slowly, but by reading quickly it is impossible (true word blindness, verbal alexia). Usually the knowledge of numbers is lost simultaneously with that of letters: cases are described by Brandenburg[82] and by Fr. Mueller[140] in which in hemianopsia the knowledge of only numbers remained intact. Here sometimes very peculiar combinations are observed. I, for instance, observed an educated patient with typical right sided hemianopsia (pupillary reflexes retained also in the blind halves) and right sided hemiparesis, who recognized neither letters nor numbers, but wrote correctly dictated sentences and larger numbers; what he himself had written he could not read nor could he pronounce any letter (printed in Latin or German). Even if one made him trace the written letter with a pen—which he could do easily—he was still unable to find the name of the letter. It was also remarkable that he could write neither single numbers nor single letters: for instance for the figure "6" he wrote an "S" and claimed that it was a "6"; on the contrary he wrote correctly the "6" in the number "605." Otherwise the memory of the patient was hardly disturbed and his faculty for thinking was perfectly good. He recognized and pronounced all things known by him previously; soon after the apopletic attack he had suffered moderately with amnesic aphasia, for he was not able to pronounce correctly instantly the different objects handed to him, but this symptom disappeared. Michel mentions a patient who could read the German letters, but who had forgotten the Latin ones.

According to Naunyn[38] in word blindness the lesion should be situated very near the place where the gyrus angularis sinistra passes into the occipital lobe. This place as well as the center of vision are supplied by a branch of the arteria fossae Sylvii (Charcot). It appears difficult, however, to suppose separate local centers for the various faculties: for instance in the above mentioned case of Brandenberg the cortical region of memory pictures for words would be located separately from that for numbers, and an injury to the former must have been present while the latter remained intact. My case, in which the memory pictures for letters and numbers was lost, but words and composed numbers could be correctly written voluntarily and from dictation, notwithstanding individual letters and numbers could not, was still more difficult.

With the alexia is often connected the inability to write —agraphia. The hemiplegia which accompanies the hemianopsia generally indicates a cerebral lesion. This can be situated in the cortex, or also can be dependent upon hemorrhage or disease in the corpus striatum and thalamus opticus. In a case of Gowers[40] both symptoms were produced by a small tumor pervading the optic tract and simultaneously affecting the crus cerebri.

Moreover Gowers calls attention to the fact that even if remaining hemianopsia seldom complicates hemiplegia, nevertheless almost always immediately after the attack causing the hemiplegia, hemianopsia appears—but only transiently. It corresponds with the paralyzed side. As the patients in this stage of the disease are not in condition to give information concerning the faculty of vision, he made the following experiment: He moved a finger before the patient's eye; the patient winked when the finger reflected its picture upon the seeing half of the retina. Kahler[77] also confirms the appearance of hemianopsia immediately after apoplectic insults.

In a collection of 154 cases of equilateral hemianopsia, hemiplegia was 59 times present; among these the hemianopsia was left sided 31 times and right sided 28 times (Michel). Moreover the inferior branches of the facialis are often paralyzed, but the whole facialis only rarely. The hypoglossus is very seldom paralyzed.

If the hemianopsia be accompanied by crossed hemianesthesia then it is possible that the seat of the lesion is situated in the posterior part of the internal capsule. In this situation, at least according to Charcot's observations, contralateral amaurosis will result; it must be remembered, however, as previously mentioned, that Charcot's observations are based mostly upon results of reports from hysterical cases. However, in a case of Hughlings-Jackson and Gowers[64] which came to autopsy and where only the posterior portion of the right thalamus was softened, left sided hemiplegia and hemianesthesia with homonymous hemianopsia existed. On account of the close proximity of the sensitive centers in the cortical cortex, however, a cortical affection could easily be supposed.

Very seldom do disturbances of smell, or paralysis of the ocular muscles accompany cortical hemianopsia. More frequently conjugate deviation of the eyes has been observed (for instance in the case of Beyer[126] in left sided hemianopsia toward the right). In this complication an affection of the *regio occipito-parietalis* is probable. In simple paralysis of the ocular muscles (exclusive of facialis paralysis which often complicates cerebral affections) usually basal disturbances are present.

In case these should be present in addition to hemianopsia homonyma lateralis, upon the opposite side loss of smell (anosmia), a cortical disturbance with affection of the gyrus hyppocampi—the center of smell according to Ferrier—could be supposed. A basal cause with involvment of the tractus and olfactory nerve must however also be considered.

We have in addition to the cases already mentioned still a number of true and undoubted cases of cortical, or cerebral hemianopsias. Here belong those cases caused by traumata. The cases published by me[6]c, [19] for instance. Keen and Thompson[46] report a case of injury from a shot which affected the left occipital lobe; finally only a right-sided hemianopsia remained. Phillips[87] saw right-sided hemianopsia after marked depression of the skull exactly below the posterior superior angle of the left parietal bone: Faranelli[98], after a fall upon the left occipital region. Peters[100] observed right-sided hemianopsia in a 29-year old patient who in his early years had suffered a fracture of the bone over the left occipital lobe. Partial atrophy of the papillae existed. The case described by Nieden[27] also belongs here.

Moreover Curschmann[48] reports a case of hemianopsia homonyma sinistra as consequence of a large softened spot in the right occipital lobe. Other cerebral affection was absent. Westphal[48] observed a patient who had homonymous hemianopsia, and convulsions upon the same side, but no loss of consciousness. Autopsy revealed a softened spot in the medullary substance of the occipital lobe, on the opposite side. F. Pick[72] saw in a uremic patient, after amaurosis lasting one day (reaction to light retained), a left-sided hemianopsia remain. A short time afterward death occurred, and the section showed a circumscribed softened spot confined to the cortex of the external surface of the second right occipital convolution. Microscopically thrombosis of a small artery in the respective meninges was demonstrable. Vialet[62] examined three cases of hemianopsia homonyma lateralis, in which section showed a lesion of the cuneus—especially of the cortex. He does not believe the positive localization of the optic center in the fissura calcarina (Henschen) is justifiable; according to him it occupies the whole internal space of the occipital lobe. Monakow[22] found in a case of right-sided hemianopsia and alexia an extensive softened spot in the left occipital lobe.

Further numerous cases of hemianopsia, partly associated with hemiplegia, with hemianesthesia, aphasia alexia, agraphia, have been dissected and have confirmed the opinion that the center of vision is situated in the occipital lobe (in recent times Lewis[94], Déjérine[95], Wolleberg[96], Delépine[97], Preston[101], Hirsch[104], Mayer[105], Brasche[122], Hoeslin[124], Bruns[130], Pic[131], Wilbrand[14]f.

The ophthalmoscopic findings in cerebral hemianopsia are generally normal. However, it is not excluded that after the affection has existed a long time a somewhat pale discoloration of the papilla appears corresponding to the nerve fibers affected. For instance, I found in an eye, which had a defect in the field of vision belonging to the non-crossing optic nerve fibers, finally the lower border becoming a little paler. This, then, was a symptom of descending degeneration; exactly as in a similar manner in retrobulbar neuritis with central scotoma after long duration often the macular side of the papilla optics is observed to become pale.

A point of importance in the diagnosis of cerebral hemianopsia is the retention of the pupillar reflex to light, even if the light affects the non-seeing half of the retina.

As the nerve fibers of the opticus, which produce by light reflex contraction of the pupil through the sphincter iridis, arise in the region of the corpus quadrigeminum (see later) and of the corpora geniculata interna and probably pass to the oculomotorius nucleus, then in a more central seated lesion of the brain this path will not be broken, and the reaction will not suffer in spite of the hemianopsia. On the contrary in the hemianopsia, caused for instance by a lesion of the tractus, the pupillary action must cease if the blind side be illuminated, because here the fibers are affected which transfer the light reflex (Wernicke's hemianopic pupillar rigidity).

Usually, however, this symptom must be used most cautiously, because it is very difficult to throw the light into the eye so that only exactly one-half of the retina will be illuminated and no light will be diffused upon the other. The best method of conducting this examination is as follows, and it should be made in a dark room: One eye is covered with a cloth; into the other eye—it being directed toward the side and looking into the distance—is thrown upon the retina with a concave mirror, (a convex glass being held in front exactly as in examining in the indirect method), the smallest possible reflex of the illuminating light. At a definite distance of the ophthalmoscope from the eye, this is obtained with comparative ease—similarly as in my method of determining therefraction by the indirect method. A slight sideward movement of the mirror removed the infalling light; the eye is then again shadowed. Changing in this manner between illumination and shadowing of circumscribed places in the retinal halves the pupillar reaction is determined. It is better for a second observer to watch the play of the pupil, and also while the person using the ophthalmoscope holds the mirror quiet, by holding the hand in front of the eye and then removing the hand to interrupt repeatedly the light falling into the eye.

In this manner the seeing and the blind halves of the retina are examined, and observed to see if differences in the size of the pupillarry reaction are apparent, or if the latter is entirely absent in case the light falls upon the blind retinal parts. Of course attention is to be paid that the person being examined does not make movements of accommodation or of convergence, because then a pupillarry contraction would occur independent of the illumination.

Recently Heddaeus[58]b, who appears to have abandoned his former opinion that only the middle portions of the retina produce the pupillar reflex to light, has called attention to the fact that "Haab's cortical pupillar reflex can occasion deception. Haab made the following observation: In the dark room the patient sits opposite the physician and looks straight forward into his pupil; a little to the side at an angle of about 45° and some distance from the physician's head is placed a lamp burning low. These conditions existing, the pupil is large. Now if the patient be told quite suddenly to direct his attention to the light—by some such question as: "Do you see the lamp?"—but without changing the direction of his vision, an evident pupillarry contraction followed by oscillations occurs. Haab explains this in the following manner: that by directing attention to the lamp, which already stood in the field of vision, another irritation of the respective part of the retina is caused; the irritation passes along the optic nerves to the central cortex and from here through descending fibers to the oculomotorius and so produces the pupillar contraction. If the patient look steadily for some time into the pupil of the physician, then the retina becomes tired, and finally he sees nothing; his accommodation diminishes with his attention. The pupillarry dilation is an external symptom of this. Now, if the person examined be aroused by any irritation—sensitive, optic, or as in Haab's experiment, acoustic—then involuntarily the lessened accommodation becomes increased, because the light from the lamp in consequence of accommodative change falls upon another less fatigued place in the retina and a new light irritation is caused. Haab's reflex will appear if the light fall upon a seeing half of the retina, and be absent if it fall upon a blind half—as soon as the attention produced by the light irritation be present. Considering this factor it might be possible that, in spite of uninterrupted conduction as far as the corpora quadrigemina, the pupillarry reaction from illumination of the seeing retinal halves could be more marked than from illümination of the non-seeing, because in the first case the cortical cerebral reflex originated by attention to the infalling light produces a stronger pupillarry contraction. Heddaeus would remove this confusing influence by placing the patient in a darkened room, one eye being covered, between two equally bright lights, directing him to look at a test letter placed one or two meters in front of him, and cautioning him at the same time not to allow the light coming from the side to distract his attention. Then by removing one light at a time to ascertain if the size of the pupil remain the same or not.

I do not consider this method of examination a good one, because from observation of a letter, and the constant light coming from the sides, the pupil contracts a little *per se*. As movements in the size of the pupil by illumination of parts on the side, in so far as elderly persons are concerned, are *per se* often small, the examination becomes much more difficult than if contraction of a pupil, which in the dark is dilated, be produced by oblique illumination. It is well, however, to consider the influence of attention, as well as that of other irritations which cause pupillar contraction, even though the influences produce smaller and only transient changes, while the light irritation causes contractions which are more marked and of longer duration. The simple method of holding a lamp to one side and first letting the light fall upon the non-seeing retinal half and then changing the lamp to the other side so that the seeing half is illuminated is entirely wrong: first on account of the influence of the attention and second because in transferring the light the macula is irritated and stronger reaction is produced. Consequently it is better always to have the lamp on the side—first corresponding to the blind retina—and by shadowing and illuminating, to determine the reaction; and then the maneuver should be repeated upon the other side.

If the examination be made in the manner described by me above and with due caution, an evident and undoubted diminution of pupillarry reaction can be observed in peripheric disturbances if the light fall upon the blind half of the retina. That this reaction is ever wholly absent is extremely rare, and as already mentioned, the diffusion of light upon the seeing retinal parts is never entirely avoided.

According to Henschen's[10]a and[10]c very detailed collections—(it is however not always certain if the examinations concerning pupillar reaction were made by the several authors with necessary precaution)—the hemianopic pupillarry reaction—i. e., both retinal halves cause the reflex—is absent in tumors and softenings in the occipital, parietal and temporal convolutions; also if these changes approach near the pulvinar, the corpora geniculata, or the corpora quadrigemina; moreover in injuries of the external corpus geniculatum, destruction of the pulvinar and of the posterior corpus quadrigeminum. On the contrary it is present—i. e., the blind retinal halves occasion no pupillar reflex—in injuries or pressure upon the tractus; the pressure is probably to be considered the cause in lesions of the posterior part of the thalamus and pulvinar where it has also been observed; moreover in lesions of the chiasma (very few cases excepted); and also in injuries of the opticus and in hemianopsia of one eye can it be present.

Regarding the course of the nerve fibers which cause the pupillarry reaction, Henschen says that the centripetal fibers of the opticus going to the motor pupillar center partly cross in the chiasma and lie upon the dorso-median side of the tractus. They bend between the anterior part of the pedunculus and the external corpus geniculatum toward the median line, some penetrating into the posterior portion of the pedunculus, some going towards Luys' corpusculum, while the main portion circumvents and penetrates into the external corpus geniculatum the fibers very probably terminate in the anterior corpus quadrigeminum. Gudden, Wernicke[53], Leyden[54], Magnus[52] are all of this opinion. The anterior corpus quadrigeminum acts as a reflex center (Flourens); the pupillar fibers pass from here through the central gray matter to the anterior portion of the oculo-motorius nucleus (Meynert, Siemerling[56], Henschen and Völckers[57], Edinger[45]). Bechterew[26]c also lately believes that the pupillarry fibers half cross in the chiasma and are contained in the tracti exactly as the optic nerve fibers. According to Mendel's investigations on the contrary the non-crossing pupillarry fibers pass in the tractus direct to the ganglion habenulae, which constitutes the reflex center, and from there to the oculo-motorius nucleus. Monakow[22] denies, however, each and every participation of the ganglion habenulae; clinical facts also argue in favor of a partial crossing in the chiasma. The latest author, H. Massault[196], who presents a literary review of all former observations, is of the same opinion. From his experiments in rabbits, the ganglion habenulae does not participate; the partially crossing fibers pass to the anterior corpus quadrigeminum: it appears, however, that their course is a different one.

The positive proof of hemianopic pupillar reflex is of significance; in recent cases it really indicates with probability a more peripheral seat of the disease. This, however, is not absolutely certain: for instance multiple processes could exist which caused also, in addition to the cortical seat in the optic center, disturbances directly in the reflex arch. It must also be taken into consideration that a reflex cause could exist, as in the case of Rothmann[55], where in simultaneous hemiplegia (hemorrhage in the region of the internal capsule) at first hemianopic pupillar reaction appeared; later, however, with improvement of the paralysis, it again disappeared. If the process last longer then the pupillar reaction to light falling upon the blind retina, even in a lesion cortically situated, can be lessened: the descending degeneration can in one manner or another also affect the opticus fibers which cause the pupillar reflex.

On the other hand the retention of pupillar reaction does not indicate positively a cerebral seat of the affection. Heddaeus has justly claimed that in unilateral amaurosis, caused by a diffuse process in the opticus, the pupillar reaction to light can remain intact, because to produce the latter occasionally an irritation of light—but one which will not produce a perception of light—is sufficient.

The absence or presence of visual hallucinations has only a certain significance. Unilateral visual hallucinations (seeing shining ball, stars, heads, figures, men, animals, landscapes, furniture, etc.) are seen in hemianopsias and often are precursors of the same. In some cases, however, they affect also the intact side. They are to be attributed undoubtedly to irritation of the cerebral cortex. It is not necessary, however, for the optic center to be directly affected; a larger zone connected with optic memory and with optic perceptions can be considered. Visual hallucinations have not, however, as Knies claims, diagnostic importance as to whether the seat of the lesion—in undisturbed pupillarry reaction—is in the optic radiation (Gratiolét's optic radiation) or in the cortex. Knies believes that in visual hallucinations upon the side of the hemianopsia, the cortex still functionates and the disturbance must lie in the coronal radiation. This appears neither theoretically sufficiently demonstrated, nor does it accord with facts.

Wilbrand[14]c observed a diabetic who complained of half sided "lacerated" vision upon the left side of the face, which after attacks of dizziness and headaches at first was transient, and then remained permanent. In the dark room, toward the left side in the visual field of the patient, incessent hallucinations (cats, heads, landscapes, etc.) which always amused him very much, were present. They ceased after several days. Examination of the field of vision showed a left sided hemianopsia which was remarkable in that the field of vision appeared perforated like a sieve, for along the different meridians the small object of examination sometimes disappear, soon half appeared again, and soon were entirely clear. Several weeks later an apoplectic attack with paralysis of the right extremities occurred. Section revealed atheromatous vessels—the chiasma and tractus were sound. The most extreme point of the occipital lobe was softened. In section a hemorrhagic softening the size of a hazel nut projected inward toward the medullary stratum. A beginning softening of the cortex of the third occipital convolution existed; basal ganglia, internal capsule and medullary substance was normal.

If the hallucination could be explained by some parts of the hemispheric visual field remaining free, then this explanation fails in the case of L. Putzel.[49] A patient suffering with cirrhosis of the kidney became affected with complete right sided hemianopsia; ten days later a visual hallucination appeared upon the blind sides. Later right sided hemiplegia, and death in coma took place. In the left cuneus a softened spot existed which extended anteriorly as far as the fissura parieto-occipitalis and downward as far as the fissura calcarina. Also in the internal capsule on the same side a small yellowish softened spot was found, and in the external border of the lenticular nucleus between the anterior and middle third was a very small hole with sharp borders and without contents.

Henschen also reports a case (case 22) where in addition to left sided hemianopsia left sided visual hallucinations existed, and on section, softened spots were found in the right cuneus and lobulus lingualis, and small spots in the right thalamus. Wollenberg,[96] as well, saw in left sided cortical hemianopsia at times left sided visual hallucinations. Nettleship[107] observed the same in right sided hemianopsia after trauma of the occiput, and Wilbrand[14]b did likewise.

Philipp Schirmer in his dissertation (Marburg 1896) reports a case where at the moment of the suddenly beginning amaurosis the patient had the feeling "that he saw a sudden fire." Section showed extensive destruction in the right occipital lobe, and softening in the area of the *arteria profoundae cerebri* on the left, especially in the fissura calcarina was a spot found.

Eddinger[120] describes similarly a case of double sided softening of the occipital lobes in which suddenly an illuminating lightning flash appeared and then complete blindness followed. Hoche[121] saw bilateral hemianopsia inferior in an insane person with hallucinations in the seeing visual field and similar hallucinatory symptoms in the blind.

In basil hemianopsia visual hallucinations have been observed. For instance, they appeared in a 29 year old man, of whom de Schweinitz writes, in the left half of the field of vision; hemianopsia however later developed there. Section revealed a gumma on the base pressing upon the right tractus. Here was present an irritation of the optic nerve fibers which reacted, according to their specific energy with symptoms of light. The case of Lancy[139]a belongs here—in this, in a right sided hemianopsia in a syphilitic person, the optic nerve entrance was blanched. The figure of a child appeared in the blind visual field as an hallucination.

Generally, however, cases of hemianopsia which are preceded or followed by visual hallucinations are associated with affections of the cerebral cortex, particularly if the hemianopsias are incomplete. Usually the hallucinatory visual symptoms disappear before the hemianopsias.

Bilateral cortical hemianopsias have very rarely been observed. The first case I described briefly in the second edition of my text-book upon eye diseases (1886). A more detailed report followed in 1893. In the meantime each of the following had reported a case: Foerster,[73] Schweigger,[31]b Gruenow,[74] Gaffron,[141] Vorster,[75] Magnus[76] and Jocqs,[144] Peters[81] and Brueckner[43] have later likewise reported cases belonging to this class. My case is the most interesting on account of being the first in which a section was made.

A 51 year old laborer in 1873 suffered a serious injury from a brick falling upon his head from a great height. For several hours he was unconscious but five days later was again at work. Later he suffered frequently with frontal headaches and attacks of dizziness. In the beginning of 1875 while unconscious he became hemiparetic upon the right side, which later was accompanied by convulsions in the right hand. At Easter he had a new attack after which rightsided hemianopsia appeared: the defect became in about three days gradually complete. Central vision at examination made in 1875, in May, was in both eyes = 1. On December 20, 1876, in the morning, after his vision had grown worse for a week, the patient became suddenly blind. He could no longer recognize light. On the following day he could recognize light and darkness—

the lamp used in examining having a medium sized flame—but could do this in only a small portion of the field of vision. The pupils reacted to light even if it fell upon the different eccentric parts of the retina. Ophthalmoscopically nothing was abnormal. Rightsided hemiparesis and moderate diminution of sensibility existed; speaking was somewhat difficult. Memory was bad, and his intelligence was small. The repeatedly returning confusion of right and left was very remarkable. The next few days vision improved. On December 25, movements of the hand could be recognized, but only in a small portion of the visual field which lay next to the point of fixation. On January 21, 1877, fixation seemed to be almost completely central—in a small portion circumventing the center at a distance of $3^{\circ}$; in this his vision was=$\frac{12}{20}$; on January 28 it was=1. Color perception was retained. Gradually the mental functions became less and less. Vision again lessened but a very small part of the visual field still functionated. In August, 1877, the patient died. Section revealed: a diffuse haematoma; scar-like contraction in the region of the left posterior central convolution; softening spots in the right occipital lobe on the border between the white and gray substance, etc.

The dura hematoma consequently was responsible for the hemianopsia existing in the beginning: and the right-sided paresis can very well be considered as the result of the extensive scar-like contraction in the posterior central convolution. The softenings in the posterior portion of the right occipital lobe—three or four spots as large as lentils or peas—interrupted later the connection with the right optic center; the mascular fibers which remained functionating allowed finally on both sides a small central field of vision to appear. The optici themselves were, as the ophthalmoscopic examination showed, intact.

In the case reported by Foerster—with the exception of a dull headache, no brain symptoms had up to the time been present—a right-sided hemianopsia appeared. About $4\frac{3}{4}$ years afterward a new disturbance of vision occurred which in several days proceeded to almost complete blindness—excepting a very small central portion which remained functionating (V.=$\frac{1}{3}$). Color sensation was entirely absent. The section of the brain reported later by

Sachs[79], showed in symmetrical portions of each hemisphere a large defect as the result of a previous softening. The defect was found on both sides on the cerebellum and cerebrum turned toward the internal lower surface which is common to the occipital and temporal lobes, and extended from here to the median surface of each occipital lobe from whence it passed partly over to the convex surface. The destruction of the left hemisphere was more extensive than that of the right: in the latter a small portion of the bottom of the fisura calcarina at the extreme posterior end remained intact. To this could be attributed the retention of the small field of vision about the fixation point which remained after the second attack.

Schweigger's patient was taken at first without other cerebral disturbances than left-sided hemianopsia. A year afterward also the right half of the field of vision except a small central field was lost; movements of the hands, however, could still be recognized in the hemiopic visual field defect. In the cases of Graenouw and Foerster apoplectic attacks preceded; in both the hemianopsia was as sharply half-sided, and also other complicating disturbances existed.

Magnus saw a man 52 years old who had remaining left-sided homonymous hemianopsia and left-sided hemiparesis from an apopleptic attack 13 years before. He collapsed in the street three weeks previously with the cry, "I have become completely blind." Soon again, however, a small visual field was found which 11 weeks later on both sides had a central position circumventing the fixation point.

Peters examined a 68-year old laborer who was suddenly attacked with typical left-sided hemianopsia; the right visual field however was also somewhat contracted. Central vision was $\frac{1}{7}$. Letters were recognized, but the smallest word could not be read; he could however read numbers (1889 for instance). Objects held in front of him were sometimes quickly and correctly recognized, sometimes with difficulty, sometimes not at all. The disturbance of the memory for places, and of the faculty for recognizing them was remarkable. In March, 1890, the left field of vision showed a marked contraction to about 2°—4°, later it again became somewhat widened. Colors were correctly recognized.

Memory for former facts remained intact. Oct. 20, 1891, death was caused by edema of the lungs. Section showed: softened spots in the medullary substance of both occipital lobes—the external part of the cortex intact—the larger spot on the right side extended into the cortical layers of the cuneus. The region of the posterior cerebral commissure was also affected in connection with the softened spot in the left side.

In the cases of Gaffron and Brückner double-sided hemianopsia began after a severe cranial trauma, and was observed as soon as an examination of the field of vision was possible.

*(To Be Concluded in April Number.)*

# CLINICAL NOTES ON SYMPATHETIC OPHTHALMIA.

BY H. GIFFORD, M. D.,

OMAHA, NEB.

Of the six cases of sympathetic ophthalmia which I have had the opportunity to observe in progress, only three have had features unusual enough to warrant my giving their histories. The first of these was F. W., aged 27. He came to me February 6, 1896, stating that while at work in a machine shop on the same morning, he was struck in the left eye by a piece of steel. I found the right eye to be normal, with a vision of 20/20 plus; the left eye had a very small perforating wound of the cornea and lens, with the latter so opaque as to entirely obscure the fundus. Vision equal to fingers at two feet. As there was nothing to indicate the location of the piece of steel and the giant magnet produced no effect, it was decided to wait until the lens became entirely opaque and then extract, with the hope of being able to see the fundus. The extraction was done after about ten days through an incision in the upper limbus. So much lens matter remained behind, however, and the process of absorption was so slow that no view was ever obtained of the fundus. A moderate reaction followed this operation, but as the congestion was subsiding and the light sense and projection of the eye were first class, the man was allowed to go to his home in a neighboring town, returning every two or three days for observation. On March 16th the right eye was normal in every respect; the vision 20/15. The next afternoon, without any warning in the way of pain or irritation, he noticed that the sight of his good eye was a little foggy. He came to me on the morning of the 18th and I found the right eye to have a very slight ciliary injection, very fine opacities, visible only with transmitted light, and plus 20 D., on the anterior surface of the lens; the optic disc slightly hyperaemic, and a small patch of faint whitish exudate in the retina close to the temporal side of the nerve, near the horizontal meridian. There was also a small patch of exudate at the inner margin of the disc. Vision = 20/30 —. Nothing unusual had occurred in the injured eye, where the congestion had been slowly but steadily decreasing with good light sense and projection. The eye was at once enucleated, but in spite of this, mercurial inunctions and atropine (to which the pupil responded promptly at first) the inflammation continued to increase slowly. The aqueous became so turbid and deposits on the lens so dense that no careful examination of the fundus could be made after the first day; numerous peripheral synechiae developed and the vision, within a week, was reduced to fingers at 5–6 feet. Then as the eye was steadily getting worse the inunctions were stopped and 150 grains of salicylate given every day for three days. After this there was no change for nearly a week, whereupon salicylate was renewed, 150 grains being given on four or five days in each week with hot applications. An improvement now set in and continued steadily until April 12th; when the vision equalled 18/200. The salicylate was now stopped for several days and less atropin was used, but the inflammation got decidedly worse, improving again when the salicylate was recommenced. On April 22d the vision was 20/50 and continued to improve under the same treatment, until on June 6, 1896, it was 20/20 plus, with the refraction corrected; and this vision has been maintained up to the present time without any relapse of the inflammation. As the inflammation decreased, the number of days in the week upon which the large doses of salicylate were given was decreased; but 150 grains were taken upon at least one day in each week for several weeks after the last signs of active inflammation had disappeared. On May 4th, 1896, when this patient's vitreous had cleared up sufficiently to allow the fundus to be seen, a patch of retino-choroidal exudate with a small retinal hemorrhage could be seen at the nasal side of the nerve with some new vessels in the retina, the nerve being blurred at its inner margin. Near the equator, down and out, there were a number of small roundish, well defined foci of choroidal atrophy, with slight rings of pigment, and other round whitish areas appearing like exudate in the retina. As the case progressed the exudate near the nerve cleared up entirely, leaving only the roundish patches of choroidal atrophy and some slight deposits upon the anterior capsule to indicate the great danger through which the eye had passed.

CASE 2. A. S., a boy of 17 years. On April 6, 1896, while trying to capture a wounded sand-hill crane, was pecked in the right eye. When seen by me on the evening of the next day there was a large wound of the inner limbus filled with shreds of iris and choroid, with the anterior chamber filled with blood. The chemosis was so extreme that the wound could not be examined well, and as there were strong indications of beginning panophthalmitis, the eye was simply cleansed and bandaged. The next day under chloroform the shreds of iris and choroid were cleared away, the bandage was renewed and full doses of salicylate were given. The improvement was quite rapid, the chemosis disappearing, the congestion lessening and the blood in the anterior chamber clearing up, so that by April 22d it could be seen that the iris was nearly or completely missing. Vision then being 10/200; vitreous opacities preventing a clear view of the fundus. A day or two after this he went out, got wet and caught cold. At this the eye became very much worse, the vision decreasing to fingers at six inches, with increased congestion and turbid aqueous. On April 30th the vision of the left eye, which had not been previously tested, was found to be 20/30, a little minus, and there was a very faint redness of the conjunctival or episcleral tissue. This congestion was not a deep ciliary congestion, and as the eye was objectively normal in every other respect, I unfortunately waited until the next day, when the patient for the first time noticed that his vision was a little cloudy, though the test showed the same vision as the day before; but the diffused congestion was more pronounced, and a strong glass showed fine deposits on the anterior surface of the lens (not on Descemets membrane); the nerve was perhaps a little hyperaemic. but nothing decidedly abnormal could be seen in the fundus. The boy said that the night before he had had a severe headache. The right eye was now enucleated, and atropine and full doses of salicylate given. The pupil dilated promptly, but the congestion gradually increased and the membrane in the center of the pupillary space thickened, so that on May

4th the vision was only 6/200. There was considerable pain at night in the front and back of the head. May 6th, 150 grains of salicylate a day having been given, the congestion was somewhat less but soon after it became worse and the pupil slowly got smaller in spite of atropine and hot applications. This increase in the inflammation continued until about May 16th, the vision being reduced to counting fingers at 1 to 2 feet. For a day or two before this the ordinary hot applications had made the eye feel worse, so flax seed poultices were used, changed every few minutes, for an hour at a time, three times a day. At the same time the dose of salicylate was increased to 180 grains in the 24 hours. This produced a prompt and decided improvement which continued steadily until May 28th, when, after going without the salicylate for three days, taking pilocarpine sweats instead, the eye became painful and the congestion increased again, whereupon the large dose of salicylate was used again on three or four days in each week and the inflammation gradually decreased until, on June 17th, the eye was free from inflammation externally, vision was 8/200. a large opacity in the vitreous preventing a view of the fundus. He left the hospital in July with the eye quiet and vision = 20/70, the vitreous being still quite turbid. He has had no return of the inflammation but when seen again after nearly a year, it was found that the lens had become quite opaque and the vision was reduced to counting fingers at 6 to 8 feet. He was last seen on April 18th, 1899, when the opacity of the lens was found to have increased slightly but he could still find his way about readily; the pupil was about 6 mm. in diameter, its edge firmly adherent to the lens. An attempted iridectomy removed only the anterior layers of the segment of iris seized. It is quite possible that he may still have his vision considerably improved.

CASE 3. Mrs. E. F., aged 59, came to me May 13th, 1898, with immature cataracts. The right lens was needled slightly, this being followed by considerable swelling of the lens, the upper part of the iris being pushed forward so that when the lens was extracted, the incision button-holed the iris leaving fragments which were hard to remove completely from the angles of the wound. A very small one of these healed in at the inner angle, but when she left the city on June 17th, with vision 20/50, this seemed to be entirely covered with conjunctival epithelium and did not project at all above the surface; the neighboring sclera, however, was slightly congested. A month later, with more accurate correction, her vision was 20/30—with the operated eye. She returned December 28th, 1898, stating that the right eye had been a little inflamed for a few weeks after she reached home, but since then had given her no trouble except now and then to feel as though something were in it. About the 1st of September she got much heated and exhausted crossing a rough field and, within a few weeks thereafter, noticed that the sight of the right eye was getting poor, this was followed by decrease in the sight of the left eye (which at the time of her visit to me had had vision of 20/100—). This decrease in vision had continued although she had had no discomfort nor to her knowledge any inflammation in either eye. I found the right eye to have a few large vessels in the neighborhood of the entangled bit of iris but the eye was otherwise free from congestion, the pupil was freely movable and showed no signs of iritis; the vitreous, however, was full of fine opacities and the vision correction was only 3 to 5/200. The left eye showed the merest trace of deep ciliary injection below (ordinarily I should not have considered this abnormal and am not certain that it was so). The corneal surface was slightly stippled below, with an extensive deposit of fine dots on its posterior surface. Pupil small, nearly occluded by firm synechiæ upon which atropine had no effect. Vision equal to fingers at 2 feet, projection good. A sweat cure produced an improvement in the vision of the right eye, but there were no new developments until this spring when on May 6th, 1899, she returned, stating that the left eye had been badly inflamed for about two weeks. I found the operated eye unchanged but the left eye was deeply congested as far back as could be seen. Salicylate promptly relieved this and as the tension was found to be a little high, an iridectomy was made four days before this writing. This was followed by a very little reaction and as the sight of the eye is good, considering the opacity of the lens, there is some chance that if the inflammation can be kept from returning she will eventually get useful sight in the eye. Any one who had not seen this last case might question the diagnosis of sympathetic ophthalmia here, but I have no doubt whatever that it is one of the mild forms of this disease and that the bit of iris in the angle of the wound of the operated eye was the starting point.

I have not completed the microscopical examination of the enucleated eyes from the first two cases. The main conditions of importance thus far found are practically identical in both; the ciliary body is densely infiltrated with leucocytes, this infiltration extending back into the choroid and supra-choroidal space, becoming more pronounced toward the posterior pole of the eye, where the posterior third of the choroid is so covered by inflammatory products as to be five or six times as thick as normal. The evidences of inflammation as shown by an increase in the number of leucocytes and in the connective tissue cells is marked along the vessels and nerves penetrating the sclera from the limbus to the posterior pole of the eye, and to a slight extent in the peripheral extremity of the inter-vaginal space of the optic nerve. There is also a slight increase in the number of leucocytes in the vitreous, this being most marked in the ciliary region and in front of the optic nerve, the physiological excavation of which is full of them. On the other hand farther back in the nerve, there are no very decided evidences of inflammation along the central vessels, as my previously published experiments on rabbits would lead one to expect. In the optic nerve trunks there may be some increase in the nuclei along the trabeculæ; but this is certainly not marked enough to indicate that any germs passed this way. At one point the infiltration of leucocytes seems to have broken through the wall of one of the vorticose veins on its passage through the sclera. The retina is slightly infiltrated with leucocytes through about the anterior tenth and at several points between this and the optic nerve. Aside from this it is apparently normal. In the eye of Case 1, nothing was found of the piece of steel which originally injured the eye and as the rather peripheral wound which was made to extract the lens was filled with a mass of leucocytes and broken up iris tissue, it is probable that the cause of the sympathetic ophthalmia was the operation wound rather than the original injury.

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All of these cases indicate three points of importance: the first is the entire absence of the premonitory symptoms, such as photophobia, ciliary injection, and asthenopia, which most books still give as the warnings of danger from sympathetic ophthalmia. None of these patients, nor any of the others whom I have seen with genuine sympathetic ophthalmia, had anything of the sort. The uninjured eye felt entirely well up to the time when the appearance of inflammatory products showed that the inflammation was there, and as the event proved, there in such a way as to progress steadily in spite of prompt enucleation in most of them. The second point is the importance of daily tests of vision, especially in cases which are not under the constant observation of an oculist, since in the cases in which the entire course of the disease could be watched, the failure of vision was the symptom which would first have attracted the attention of a non-expert. The third point is the value of large doses of salicylate of sodium after the disease has broken out. I had treated my other cases with atropine, hot applications and mercurial inunctions without any effect that I could determine, but the influence of the salicylate in these later cases was so marked and its result on the whole so favorable, that I do not hesitate to recommend it as the most important remedy for the disease that I know. It should be noted, however, that the amount used was as large, as possibly to be thought excessive by some; 180 grains in 24 hours had to be given in Case 2 before the disease was checked. This was given in 15-grain doses in a teaspoonful of brandy, and the patient kept in bed while the salicylate was being taken. As this boy's weight was not over 130 lbs., a full-sized man would require at least 200 grains as a proportionate dose. Perhaps it is also worth mentioning that in Case 2, and in one other case which I have seen, heat applied in the ordinary way (*i. e.* moderate sized pieces of cloth or cotton wet with hot water and changed every half minute) seemed to act unfavorably, while the greater body of heat furnished by poultices, changed frequently, seemed to do much more good. The explanation for this may be that in these cases much of the inflammation was seated so far back in the eye that the milder heat reached the deep-seated inflammation only in such a degree as to stimulate rather than to check it. I have had a similar experience in deep-seated affections of the mastoid.

With regard to the bearing of these cases upon the theory of sympathetic ophthalmia, the entire absence of the symptoms of sympathetic irritation certainly speaks against the influence of the ciliary nerves as an important factor. While the pathological conditions, in spite of the fact that I have, as yet, found no germs in the eyes, show plainly the existence of an infectious inflammation, strongly pronounced in the posterior as well as the anterior region of the eye; passing out of the globe along numerous avenues which might lead to the other eye; or, as indicated by the condition of one of the vorticose veins, into the general circulation. The presence of inflammatory products in the anterior chamber, simultaneously with the occurrence of retinitis at the posterior pole of the second eye, in Case 1, and before the occurrence of marked ophthalmoscopic changes at the posterior pole, in Case 2, are about what the anatomical conditions would lead us to expect if the disease had spread down from the cranial cavity through the inter-vaginal space; from the peripheral extremity of the latter, the short distance to the retina and to the optic disc is probably compensated for by the more free communication with the iris and ciliary body through the supra-choroidal space. Without pretending to have looked up the point thoroughly, I do not remember that fresh retinal exudate has previously been observed in sympathetic ophthalmia. The roundish patches of choroidal atrophy visible in the latter stages, in Case 1, were exactly like those previously described by Hirschberg, Haab and others; and are simply one more indications that sympathetic ophthalmia is a diffused inflammation of the choroid as well as of the ciliary body and iris.

Whether the inflammation reaches the second eye through the optic nerve trunks via the chiasma, as first suggested by Alt, or possibly by Mackenzie (Mackenzie's language is ambiguous on this point); or through the inter-vaginal and sub-dural spaces, according to Leber and Deutschmann, or along the vessels penetrating the eye and passing through the orbit to the cranial cavity as first suggested by me and considerably later by Gayet, or through the general circulation as suggested by Berlin may be considered an open question. I am inclined to think that any one of these paths may be taken, but I firmly believe that sympathetic ophthalmia is an infectious disease caused by germs which are yet to be determined. The main objections to the germ theory of sympathetic ophthalmia are that germs have so seldom been discovered in enucleated eyes; and that none but Deutschmann has been able to produce anything like sympathetic ophthalmia in animals. Since the latter of these objections applies equally to any other theory it need not be considered. Against the other objection may be urged, first, that many of the eyes examined with negative results have been enucleated, not for real sympathetic ophthalmia, but for sympathetic irritation; second that the difficulty of identifying germs in the tissues with the microscope, unless they are extremely numerous, is so great that the failure to detect them is of very little value as a proof of their absence. Perhaps the most striking example of the difficulty of the microscopical determination of well known germs in the tissue is given by the tubercle bacillus which, in the less virulent forms of tuberculosis, is rarely discovered with the microscope, but is generally proved to exist only by inoculating the lower animals. Now the eyes which cause sympathetic ophthalmia, are generally the seat of a slow inflammation such as we should expect to be caused by a comparatively small quantity of germs, and until we have some test for them as reliable as the inoculation test for tuberculosis, it need not surprise us greatly if the germs of sympathetic ophthalmia elude our search. Furthermore if the negative results of microscopic examinations be allowed important weight against the germ theory of sympathetic ophthalmia they prove too much, for they could then be urged with equal justice against the germ theory of plastic inflammation in general; that is to say, if after a wound of the eye in which no foreign body nor chemical irritant is left behind, we have a progressive plastic inflammation such as the microscope showed to have taken place in Case 2, we find no germs with the microscope, we cannot urge this against the germ theory of sympathetic ophthalmia without implying that germs had nothing to do with the inflammatory sequelae of the original wound; a proposition which I think would be scouted by any modern pathologist. It seems to me that we may assume the infectious nature of sympathetic ophthalmia with the same confidence that we may assume that of syphilis or small-pox. The clinical history and the pathological conditions are such as we have every reason, from analogy, to believe are caused only by living germs; and the fact that we have not found them simply points to the necessity for further research, without invalidating the theory.

Finally, with regard to the theory of Schmidt-Rimpler, which combines the germ and ciliary-nerve theories and assumes that on account of the vaso-motor disturbance occasioned in the well eye by the irritation in the injured one, germs which may have entered the circulation from any part of the body find a suitable environment for their development in the well eye, I must say that this is opposed to a vast amount of important clinical testimony. If sympathetic ophthalmia depended merely upon the coincidence of ciliary irritation and the accidental presence of germs in the circulation, why should we never hear of sympathetic ophthalmia in the tedious ciliary irritation existing with the numerous cases of one-sided keratitis whether of trachomatous, herpetic, phlyctenular or other origin? This seems to be a fatal objection to the theory unless we add still another theoretical assumption, namely that if the germs reach the second eye through the general circulation, they must come from the injured eye and that such germs settle in the second eye either because, from the start, they were especially adapted for growth in the eye, or because through a process of natural selection in the course of their growth in the first eye, the survivors have become especially fitted to attack eye tissues in general. I do not pretend that I have any great confidence in the theory as thus elaborated, but it seems to me without such an addition the theory of Schmidt-Rimpler will not stand the test of clinical experience.

# THE VALUE OF CYCLOPLEGIA IN OPTOMETRIC EXAMINATION.

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This paper is, at least in part, deduced from a review of the records of examination of one thousand eyes of my own patients, in private practice, in which artificial cycloplegia has been purposely produced for the sake of optometric examination. The case records of 5257 of my first private patients have been required, in order to have the desired data concerning one thousand eyes. Of the cases in which cycloplegia had been produced, for the purpose of optometric examination, 19.7 per cent. were unfit for use in the preparation of this paper, because of the incompleteness of my novitiate records, which incompleteness prevented the desired comparison of the seeming static refraction, before cycloplegia, and that found during cycloplegia. The number of eyes, the records of whose examination are trustworthy, one thousand, was chosen partly because of the facility of computing percentages from that number and partly because time for reviewing a greater number was not found. The usual effect of cycloplegia, showing itself as an increase in the discoverable amount of hyperopia or decrease in the strength of a concave lens necessary to enable the myopic eye to see well, has, in this paper, been called a "gain." In some cases, the opposite effects were obtained; that is, the hyperopia has appeared less or the myopia more, during cycloplegia, than before it was produced; such eyes have been accounted as furnishing a "loss." Of the 1000 eyes, 89.9 per cent. furnished gain, 4.5 per cent. furnished loss and 5.6 per cent. neither gain nor loss. These percentages may have been affected by the fact that the examiner is apt to use a deal of effort and patience to bring the manifest hyperopia as nearly as possible to the total before having recourse to artificial cycloplegia. A gain of any amount of corrigible astigmatism has been estimated at half that amount, numerically, since a unit of gain, at right angles to the cylinder-axis, seemed to need to be averaged with the zero in the direction of the axis; which average seemed fairly stated as one-half the sum of the two. The rays entering an eye are proportionately more refracted as they are farther from the line of vision. This is practically or wholly explanatory of the 4.5 per cent. of cases in which cycloplegia resulted in what has here been called loss. It has been sought to eliminate the influence of existing fundus-inflammation, in the cases reviewed, since the effect of no cycloplegic drug can neutralize the effect of such inflammation. Acting upon the instruction of Doctor Edward Jackson and the corroborative testimony of Doctor Florence Mayo's investigations, it was assumed by me, years ago, that the instillation of a 2 1-2 per cent. solution of the hydrobromat of homatropin, in an eye, six times, at intervals of five minutes, will produce cycloplegia within an hour from the time of the first instillation. Such cycloplegia has not always resulted. In a few cases, the instillation of the cycloplegic solution needed to be continued. In fourteen cases, of the thousand eyes, under consideration, the eye, whose cycloplegia had been so sought, could read Jaeger's, No. 2, at 24 centimeters, an hour after the time of the first instillation. In some of such cases the incompleteness of the cycloplegia may, perhaps, be explained by the carelessness of the person who made the instillations, although the attendants who have been intrusted with the use of the cycloplegic have usually been carefully taught, by the examiner or some experienced attendant, in the method of its use.

The total gain in the 1000 eyes was 640.732 dioptries.
" " loss " " " " 13.875 "
626.857 "

Hence the average gain was 0.6268 dioptry.

There were 799 of the eyes which furnished gain.
" " 44 " " " " loss.
" " 157 " " " " neither gain nor loss.

299 eyes furnished a gain of 0.5 D., or less.
218 " " " more than 0.5 D., but less than 1.0 D.
96 " " " " " 1,0 D. " " 1.5 D.
45 " " " " " 1.5 D. " " 2.0 D.
17 " " " " " 2.0 D. " " 2.5 D.
14 " " " " " 2.5 D. " " 3.0 D.
7 " " " " " 3.0 D. " " 3.5 D.
2 " " " " " 3.5 D. " " 4.0 D.

None of the eyes furnished a gain between 4.0 and 5.0 D.

One eye furnished a gain of 5.5 D.; it was the *right* of a girl with slight convergent strabismus, whose *left* eye furnished a gain of 3.5 D. She was eleven years old, when examined, in 1894; the use of Dr. Casey A. Wood's ophthalmic discs, No. 342, one hour, raised the hyperopia of the right eye from 2.5 to 8.0 D., that of the left eye from 2.5 to 6.0; each eye was astigmatic, the right by 0.75, the left by 2.25 D.; this amount of astigmatism was common to each eye before and during the cycloplegia. It seems worthy of note that, in each of these eyes, the obtainable acuteness of vision was greater during than before clycloplegia; that of the right was increased from less than 6/9 to 6/6 of Snellen's standard, and that of the left from less than 6/21 to 6/12, of Snellen's standard, by the cycloplegia, or, at least, during it,

40 eyes furnished a *loss* of 0.5 D., or less.
2 " " " " " more than 0.5 but less than 1.0 D.
2 " " " " " " " 1.0 " " " 1.5 D.

None of the eyes furnished a loss greater than 1.5 D.

None of the eyes were those of persons less than five years old.

| No. eyes. | Age. | Average gain from cycloplegia. |
|---|---|---|
| 31 | 5-10 | 1.05 D. |
| 92 | 10-15 | 0.75 D. |
| 225 | 15-20 | 0.56 D. |
| 228 | 20-25 | 1.299 D. |
| 160 | 25-30 | 0.58 D. |
| 128 | 30-35 | 0.664 D. |
| 101 | 35-40 | 1.05 D. |
| 25 | 40-45 | 0.54 D. |
| 7 | 45-50 | 0.446 D. |
| 3 | 50-55 | 0.125 D. |

In a few cases I have found more hyperopia evident sometime after cycloplegia than before or during it. In case 5231, a woman 23 years old had 100 per cent. of visual acuity, according to Jackson's standard, with each eye, without a glass or with convex, spheric 0.75 D.; the ciliary muscle being normally contractile, on the 10th of September, 1895. On the 2nd of October, same year, 2 1-2 per cent. solution hydrobromat of homatropin was instilled in each eye, as described above. Seventy-three minutes after the first instillation, each eye had the same visual acuity (100 per cent. Jackson) with each convex spheric 1.25. On the 26th day of May, 1899, each eye had the same visual acuity as on the former dates, just given, with each convex spheric 1.75. How this is to be explained, since no disease was found in either eye at any of the examinations, is a question I ask, not answer. Another, similar experience, is somewhere recorded in my case-records, but the time to seek its history has not been found.

Experience with the thousand eyes in question has helped lead to the conclusions.

1. A solution of 2 1-2 per cent. of homatropin hydrobromat, instilled six times, at intervals of five minutes, provides trustworthy cycloplegia in the average, healthy human eye, in from one to three hours from the time of the first instillation; usually in an hour or ninety minutes.

2. As a rule, the protracted use of a one per cent. solution of the sulphat of atropin is no more effective, as a cycloplegic, than is the 1:40 solution of the alkaloid above mentioned.

3. In ten per cent. of the cases consulting an ophthalmic surgeon, it is desirable to produce artificial cycloplegia. In such cases, the production of cycloplegia is inevitable, if the examiner will provide refractive correctives that shall afford the patients the *best* service.

# RETROBULBAR ABSCESS DUE TO EMPYEMA OF THE MAXILLARY ANTRUM AND ETHMOIDAL SINUS RESULTING FROM DENTAL CARIES: OPERATION: RECOVERY.*

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The report of cases of retrobulbar abscess is warranted not only on account of the rarity of the affection, but also on account of the difficulties attending its diagnosis. What difficulties may be encountered in its diagnosis can be readily appreciated when one considers the many tissues which fill out the orbital cavity, the complex structure of the neighboring cavities, apertures and sinuses. The following case is, I believe, of especial interest on account of the youth of the patient, its almost insignificant cause (dental caries), its fulminant course, and its progress to recovery after operation.

The history of the case in brief is as follows: The patient is a boy 5 years old, who up to the present illness has enjoyed perfect health. The family history is good. On the 15th of April he complained of slight toothache, to which no attention was paid by the parents. On the following day the child became feverish, and later in the day there developed a swelling of the cheek, which extended rapidly and involved the eyelids, the side of the nose and forehead. The eyeball was protruding and prominent. This condition was regarded as the result of a bite of some poisonous insect and was treated as such by the family physician. But the child became steadily worse and the inflammation extended. The constitutional symptoms, chills and fever, becoming more severe, an eye specialist was called in consultation, who made a diagnosis of septic thrombosis of the orbital veins, and predicted a fatal result. The day after I was called in, and found the patient in the following condition: He was lying in bed with a temperature of 103° F. The left cheek, the eyelids and the left half of the forehead down to the zygomatic arch were all greatly swollen and red. The left eye was prominent and bulging directly forward. The conjunctiva was very chemotic, of a grayish purple color, and protruded under greatly swollen eyelids. The pupil reacted to light, but the child could distinguish only between light and darkness. On account of the swelling of the lids a careful ophthalmoscopic examination was impossible, and all that I could ascertain was that the media were clear. Examination of the nose revealed a flow of pus from the left nostril. Upon inquiry I was told that this had begun three days ago. I made a diagnosis of empyema of the antrum of Highmore and gave a favorable prognosis. I lanced the upper eyelid at its most prominent part and thus permitted a large quantity of thin, watery, grayish, very offensive pus to escape from the orbit. The next day a dentist extracted the two carious bicuspid teeth from the left side of the upper jaw. This operation was not followed by a flow of pus from the antrum into the mouth, as I had expected. With the assistance of my colleague, Dr. I. M. Rottenberg, I drilled into the antrum through the cavity of the tooth, and thus succeeded in evacuating about an ounce of very foul pus. A curettage of the antrum brought away some granulation tissue and necrosed bone. The day following I enlarged the incision in the upper lid and found the orbital cavity entirely filled with foul-smelling pus. The lamina papyracea was broken down and presented an opening of about the size of a quarter. This cavity was filled with granulation tissue and led to the ethmoid sinus, which was also filled with pus and necrosed tissue. I curetted and thoroughly cleansed this cavity. Microscopic examination of the pus revealed only the ordinary products of purulent inflammation produced by strepto—and staphylococci. The subsequent treatment consisted in daily cleansing the orbital cavity with a Lysol solution, packing with iodoform gauze and draining the ethmoidal sinus and the maxillary antrum with a strip of gauze. The progress to recovery was rapid and marked.

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*Presented at the Ophthalmological Section of the N. Y. Academy of Medicine, May 15, 1899.

To form a proper conception of the course of the disease in this case it is necessary to recall briefly the local relations existing between the orbit and the adjacent pneumatic cavities, and between these cavities themselves. With the exception of the outer wall and small part of the roof the orbital cavity is completely surrounded by the accessory sinuses of the nose. As regards the sinuses themselves we must bear in mind that the ethmoidal sinus occupies such a position; that any disease within it may very readily extend into any one or more of the adjacent sinuses. This proposition must be very evident to any one cognizant of the fact that not infrequently the ethmoidal sinus forms a part of the floor of the frontal sinus, the anterior wall of the sphenoidal sinus, and in some cases the inner portion of the roof of the maxillary antrum. With these few facts in mind we at once see how the caries of the bicuspid teeth, which gave the first symptoms, was responsible for all the subsequent complications. The very rapid and fulminant course of the affection shows that the inflammation set up by the dental caries was due to an extremely virulent germ. Empyema of the antrum developed very quickly, and the purulent inflammation extended rapidly into the adjacent sinuses. As the purulent discharge from the nose appeared only on the third day after the beginning of the disease I presume that that marked the onset of inflammation of the ethmoidal sinus. In a very short time the outer wall of the ethmoid bone broke down and a large quantity of foul pus burrowed under the periosteum of the orbit pressing upon the optic nerve (and thus producing temporary amblyopia), filling the funnel-shaped space of the orbit with pus and pushing the eyeball straight forward.

How little the importance of the affections of the accessory sinuses of the nose are appreciated generally is well shown by Dr. Fraenkel's report of 146 autopsies on unselected cadavers, in whom during life no disease of the accessory sinuses had been diagnosed, and yet he found that in no less than in 63 of these cadavers (40%) there was disease of one or more of these sinuses. According to the researches of Kuhnt two diseases of the orbit are due to affections of the accessory nasal cavities in 0.29%.

The proper conception of the relationship between orbital abscess and empyema of some of the accessory sinuses of the nose is an achievement mainly of the last decade.

Examination of the early literature of this subject will amply justify the above statement. I need only to refer to the case reported by so celebrated a man as Dr. Knapp[3]. The patient, a man 46 years of age, of good general health, in whom loss of vision and exophthalmos developed within two days. Six months after the onset of these symptoms Dr. Knapp found optic nerve atrophy of the affected eye, but could not ascertain its cause. He regarded it as probably a case of thrombosis or embolism of the ophthalmic vessels. But a year later the patient told him that after a nose specialist had accidentally opened an abscess in his nose on the side of the affected eye, he felt at once relieved and his eye resumed its normal position. The case was evidently one of ethmoidal empyema, which had broken into the orbit.

Dr. Noyes[4] in 1875 reported a very interesting but somewhat obscure case of abscess of some one or more of the accessory sinuses which broke into the orbit and produced exophthalmos and an orbital fistula, but in which no exploratory investigation of the diseased sinus or sinuses was made.

In a review of the literature of orbital abscess I found only the following cases reported by Mair[5], Goodhart[6], Bacon[7] and Snell[8], that resemble the case reported in detail above. I shall not report the cases in full, but confine myself to giving a brief notice of them.

Dr. Mair's case was as follows: Periostitis of the root of a tooth resulted in empyema of the antrum. The tooth was extracted, but the purulent inflammation extended and produced suppuration in the ethmoid cells, which broke through into the orbit and formed an orbital abscess.

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[2] Die Entzündlichen Erkrankung der Stirnhohlen, 1895.

[3] Transactions of the American Ophthal. Society, 1898-99.

[4] Cases of Disease in the Orbit, 1875.

[5] Edinb. Med. Journ., May, 1866.

[6] Med. Times and Gaz., July, 1876.

[7] Med. Times No. 21, 1868.

[8] Lancet, July, 1890.

The inflammation extended through the optic foramen, gave rise to meningitis and encephalitis causing death.

Goodhart reported also a very interesting case of dental caries in a little patient, 4 1/2 years of age, followed by abscess of the mixillary antrum, acute periostitis of the jaw, suppuration in both orbits, ostitis of the vault of the skull, pyemia and death.

Dr. M. Bacon reported a case of dental caries, followed by abscess of maxillary antrum, abscess in the orbit on the other side of the head and death.

The case reported by Snell is as follows: A girl 14 years of age was suffering from dental caries and swelling of the face, for the relief of which two teeth were extracted from the jaw. This operation was followed by a discharge of foetid pus from the maxillary antrum. A fortnight later, following exposure to cold, there developed marked swelling of the eyelids on the affected side, proptosis and oedema of the conjunctiva. Vision was not affected, and ophthalmoscopic examination showed that the media were clear. Pain in the orbit, headache and vomiting having developed an incision was made into the lower lid, allowing a considerable quantity of pus to escape from the orbit and thereby affording the patient great relief. Two days later, however, symptoms of meningitis developed and the patient died.

My case differs from those just mentioned chiefly in the survival of the patient. I attribute the happy outcome of my case entirely to the fact that I explored and treated not only the orbital abscess, but also the neighboring accessory sinuses.

338 E. 4th St., and 709 Madison Ave., N. Y.

# SOME WOUNDS TO THE EYE AND ITS ADJACENT PARTS IN THE CUBAN WAR OF INDEPENDENCE.

By DR. J. SANTOS FERNANDEZ,

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TRANSLATED AND ABRIDGED BY

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*(Original Article for the Annals of Ophthalmology.)*

In 1895, I treated a patient injured by the passage through the orbit of a Mauser bullet; the globe was not wounded. Since then I have had two cases of the same kind, and I cannot touch the details of the treatment without at the same time referring to some considerations of wounds of this nature, especially those received in such a field war as Cuba has experienced.

CASE 1: Wound by Mauser bullet at the back of the orbit. A man, 37 years of age, consulted me for the first time July 1, 1892. I performed a small operation on the conjunctiva of the right eye, after which I did not see him till March 26, 1897, when he came again to consult me, this time with the right eye lost by a hand granade. He said that one night his troop attacked the enemy, occupying a height: they used artillery in defense; a piece of the shell struck his right eye. The surgeon attending him explored the wound for a foreign body, and bandaged it, but the constant movements of the troop deprived him of proper attention. When I saw him, six months after the injury, the right eye was atrophic and there was symblepharon between the globe and lower lid. There was some suspicion of sympathetic ophthalmia, for the remaining eye (the left) had some symptoms of irritation. Examination confirmed the diagnosis of vitreous opacity, due, to some extent from anemia, from which the patient suffered.

CASE 2: A man, 25 years old, on December 21, 1898, told me that in March, 1895, he had been wounded by a Mauser bullet on the right side of the head. The ball penetrated at the base of the right ear, forward. It took its exit at the outer third of the right superior border of the orbit. Both wounds had cicatrized. Unconsciousness followed the wound for about six days. The attending surgeon said that the eye ball had not been injured, and as a matter of fact sight remained a few days, after which it was gradually lost. He was at present wearing a glass eye that did not fit on account of the symblepharon. Enucleation was only a partial success cosmetically, because there was not complete closure of the upper lid, and some edema, due to irritation from the glass eye.

CASE 3. Captain F., of the Spanish Army, 41 years old, said that in a recent battle he had turned slightly aside to give information to a soldier; at this moment he was struck by a bullet in the left temple and knocked down. In spite of this he continued fighting for four hours more. On examination, 36 days from the accident, I found an appreciable cicatrix, at the wound of entrance, situated three centimeters from the extended (left) upper orbital edge, the wound of exit being at the extreme nasal side of the eyebrow. The direction of the bullet had been in a straight line through the orbit. On making this passage there had been laceration of the orbital tissues but no injury to the ball itself.

Immediately after the injury there was so much swelling that he could not tell whether he saw or not. When the swelling had subsided, he noticed that the globe was smaller and that vision was lost. On September 2, 1895, when I saw him, the globe (left eye) was quite atrophic and deformed; only a remnant of cornea could be seen. Back within the orbit could be found cicatricial bands indicative of the preceding inflammation. Enucleation was performed for the purpose of fitting a glass eye.

CASE 4: Captain H., 42 years old, was wounded August 2, 1895. A bullet struck him at the outer edge of the right eyebrow, passed from right to left, and from above downward, and took its exit at the base of the nose, on the left side. There was profuse hemorrhage and blindness on both sides. (I think it was the blood from the right eye that caused the left-sided blindness, but the patient is certain that blindness was total, and not from this cause). The surgeon giving first aid applied carbolized water, but did not see him again for 21 days. All this time he remained on a ranche in the country, and did nothing but bathe the eye in fresh water. On the surgeon's second visit, he was told that he would see again, but the patient assured me that the eyes were as blind as at the instant of being wounded. He said that there was no pain at all! When I saw him April 1, 1899, there was evidence of atrophy in both eye balls, both were about half the normal size, the corneae were about gone, and in their places were merely two transverse scars. There was no symblepharon. The eyebrows were intact.

From these narrated cases, it will be seen how imperfect has been the treatment offered to those who are injured in Cuban warfare. In the second, third and fourth cases, it is evident that the Mauser is relatively a humane bullet, for if the wound had been caused by a round bullet, or if the distance had been a very short one, there would substantially have been complete destruction of the parts, and probably a great danger to life itself. In the last three cases, it is seen that in all likelihood the bullet did no damage to the globe itself, but that the resulting injury was due to the hemorrhage and to the swelling produced by the traumatism to neighboring parts. If these wounds—under such bad conditions in country warfare as never prevail in hospitals or in times of peace—could have been treated by proper surgical means, by drainage and antiphlogistics, it is probable that the physiological effort would have re-established vision, or at least prevented its total loss. I would hope that ice, antiseptics, etc., not only would have overcome congestion and suppuration, but would have freed the organism from the strain made necessary to oppose them when once admitted. Case 4 is only one of the many illustrations of the passage of a bullet through the human body, but interest should always be aroused to such accidents, and one is warranted in imagining the treatment of such a case, if it should present itself under modern surgical conditions. If a patient were seen with a wound at the external superior orbital edge of the right eye, and wound of exit at the base of the nose (left side) at the bend of the lacrimal sack, we may assume that the bullet traversed the orbit, with or without perforating the globe, even if it is atrophic, but if movements are preserved, let us suppose that the globe escaped. The loss of the right eye is here easily explainable; but that of the left eye, to-day in identically the same conditions as the right, although everything indicates that the ball passed out of a plane below this eye, can be explained only on the ground of swelling, infection and inflammation. Modern treatment would have prevented this, and the result, in all probability, would have been, not the dire disaster we see now, but the preservation of vision in that left eye, and a restoration of the patient to a happy life.

# DIABETIC CATARACT, WITH THE REPORT OF A CASE[1].

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The word "cataract" is derived from the Greek and means a "tumbling down," and not a waterfall as sometimes stated. A waterfall is called a cataract because it is a tumbling down. The word cataract has been in general use since the eleventh century, and was first used because the ancients thought the loss of vision was due to something falling down in front of the lens—the lens by the way was at that time considered the seat of vision, and even unto this day the idea is still prevalent amongst the untutored.

The term "cataract," as it is used to-day, includes more than it *per se* implies. Only by the use of modifying adjectives can we with propriety enlarge its meaning. In this connection it is rather interesting to consult some of the various writers of books on ophthalmology to see the variety of definitions given, *e. g.*, one says: "In modern ophthalmology the word 'cataract' has come to mean any opacity of the lens, being applied to any want of transparency, whether partial or complete;" another says, "the general term 'cataract' is accepted in modern medicine as meaning any opacity of the crystalline lens;" another says, "as soon as the smallest area of the lens loses its transparency we call it cataract;" another says, "under the term cataract are included several types of an opaque condition of the crystalline lens, of its capsule, or of both these structures, which anatomically are distinguished by the titles *lenticular*, *capsular* and *capsulo-lenticular;*" another says, "we may have opacity of the lens or of its capsule, or of both—*i. e.*, lenticular or capsular cataract."

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[1] Read before The Pittsburg Academy of Medicine.

The great fault with all these definitions is that their authors try to include too much. The writer's opinion is that there is but one logical definition for cataract and that is to call it *an opaque lens.* This is all the word itself means or can mean, or all it was ever intended to mean. Whenever any other meaning is to be given to it some modifying adjective must be used to make it specific, and the number of them has increased with our knowledge of the pathology of the eye. Yet all these writers do not hesitate to speak of a "cataract extraction," and mean thereby a removal or extraction of the lens, not of an "opacity of the lens," or "*any* opacity of the lens." Why then not call a cataract *an opaque lens?* When an opacity exists it is spoken of as immature, incipient, polar, nuclear, etc., cataract, but not as cataract. It only attains this name without any modifications when the lens is opaque. If the opacity is in the capsule we are compelled to describe it by the use of the adjective capsular, and so on for any particular form.

And this leads up to the consideration of diabetic cataract, which is an opaque lens occurring in diabetics. That cataract occurred in diabetes was disputed by many for a long time, but now is practically accepted by all, so that to-day diabetic cataract stands as an undisputed condition accompanying diabetes and may well be considered the prototype of constitutional cataract. The appearance of it at any age (from nine years up), and the bilateral, rapid development distinguish it from any other form. The mature diabetic cataract, however, offers no distinguishing physical characteristics which would enable us to differentiate it from other forms. The nature and course of its development depend upon the age of the individual, the younger the subject the more rapid its development. According to Becker the course of development in young subjects is as follows: At first the equatorial zone becomes opaque; then, in most cases, the posterior cortical substance; when this is complete, it extends to the anterior portion; then the center lens swells and rapidly becomes opaque. The rapidity with which the process may complete itself is at times startling, as a case has been reported in which a cataract formed in a diabetic patient during the course of a few hours.

As to the frequency of this malady, the experience of observers differs greatly, *e. g.*: Seegen reports six cases in 140 diabetics; Oppolzer two in 24 diabetics; von Graefe thought 25% of all diabetics develop cataract. Mauthner, after examining a great many diabetics in Carlsbad, found it "not often." Becker found sugar in the urine of only eleven patients in 1,100 extractions. König found 10 in 500 cases examined by him. The writer has seen but one true case during a period of eleven years in both private and clinical practice.

The great discrepancy in these figures is no doubt due to the fact that it depends entirely upon the observer whether he considers cases occurring in patients beyond 40 or 45 as senile or diabetic. The mere fact that a patient beyond 40 or 45 with a cataract and sugar in the urine does not of itself establish or justify a diagnosis of diabetic cataract.

The question of the cause and nature of the development is still in a hypothetical form and consequently *sub judice*. The best way to arrive at a proper understanding of the various hypotheses is to study the nutrition of the normal lens. Even this subject is not well understood. Yet it is generally accepted that the equator of the lens constitutes the point of entrance for its nutritive fluids; as to the point of exit there is no unanimity of opinion. The entrance channels have not even been satisfactorily demonstrated. They may not exist at all. At any rate all cataracts are due to a disturbance in the nutrition of the lens. To explain the formation of diabetic cataract several hypotheses have been suggested. The opinion of Magendie, advanced many years ago, that the blood of diabetics was thickened and thus caused the lens to become opaque has long since been superceded by others. General marasmus has been suggested, but this again proves nothing, because many very feeble diabetics never develop cataract (perhaps they don't live long enough). The hygroscopic properties of the sugar-containing blood is supposed to cause a partial dehydration of the lens and thus render it opaque. This supposition would necessitate all diabetics with sugar in the blood to develop cataract. Knies seems to have found the most plausible explanation when he attributes it to auto-intoxication.

The nutritive changes in the lens resulting from the presence of toxic agents circulating in the blood rather than from the presence of sugar. The practical side of all this centers in the treatment, which is limited to surgical. In considering this the prognosis is most important. The opinion is prevalent that wounds and injuries in diabetics are prone to suppuration and consequently endanger the prognosis of an operation. Writers differ in their opinion as to the prognosis of cataract extraction in diabetics. The majority unhesitatingly say it is practically no worse than for ordinary senile cataract, yet the writer found one author, who says, "as a rule operations for diabetic cataract are not advisable, for they generally fail, owing to almost invariable suppuration of the eye." It was this last sentence which is responsible for this paper. The writer is fully aware of the fact that "one swallow does not make a Summer," yet one such sentence may deter an operator from operating and keep some poor soul in total darkness. With modern methods of cleanliness the operation is practically without danger. Reported cases are scarce, but since this paper was written Dr. Randolph of Baltimore reports five successful operations occurring in three patients. All were operated in Johns Hopkins Hospital, the first 5 years ago, the second three years ago and the other last Fall. This also gives some idea of its frequency.

As before stated it has been the good fortune of the writer to see at least one true case and operate on it. The patient is a Jewess, age 17 years; first seen on January 8, 1898; of robust appearance, round face, with rosy cheeks and full red lips; of about 5 feet 7 inches in height, and weighing 135 pounds. Has had pronounced diabetes for a few years, the urine being loaded with sugar; patient having a voracious appetite and a desire for sweets which surpasses anything ordinary. When deprived of sweets at home she goes to the neighbors, or runs a bill at the confectioners. She had always had good vision, but for some time noticed a gradual diminution so that reading becomes difficult. On examination a stellate opacity was observed at the posterior pole of the lens of each eye, and after dilating the pupil the equatorial portion of the lens was found opaque. The patient was seen at intervals so as to study the progress of the development, which in this case coincides with the description already given of Becker. By March of the same year the right lens was completely opaque and the left nearly so, so that the duration of development was about 4 months. When patient was first seen in January, 1898, she had R. V. = $\frac{3}{200}$; L. V. = $\frac{10}{100}$.

A preliminary iridectomy was done on the right eye April 12, 1898, and the lens extracted May 20, 1898. Both operations passed off without any interruptions, the healing process being very good. The vision obtained was $\frac{10}{70}$ with + 5·00 D. S. $\supset$ + 1·00 D. C. axis 180°, and with + 9·00 D. S. she reads Jaeger No. 1.

The removed lens was carefully transferred to a small bottle containing distilled water to ascertain its weight and to test for sugar. The consistency was that of boiled starch and it weighed 25 centigrammes. A careful test with copper used as "Haines' solution" revealed the presence of sugar.

524 Penn Ave.

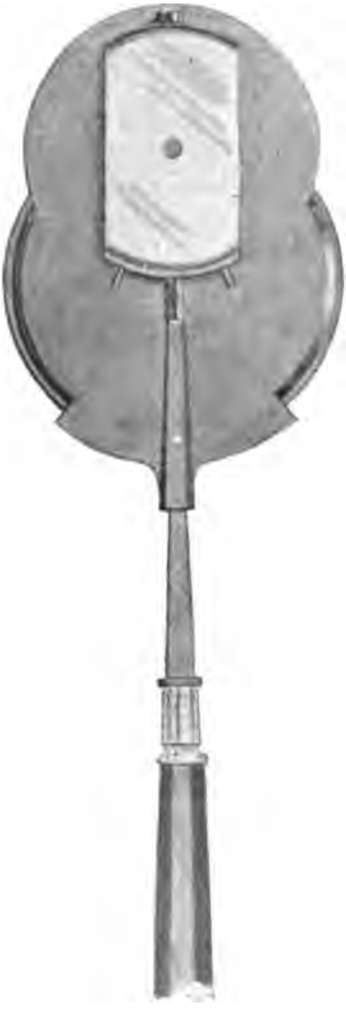

Fig. 1. Front View. (Slightly Larger Than Actual Size.)

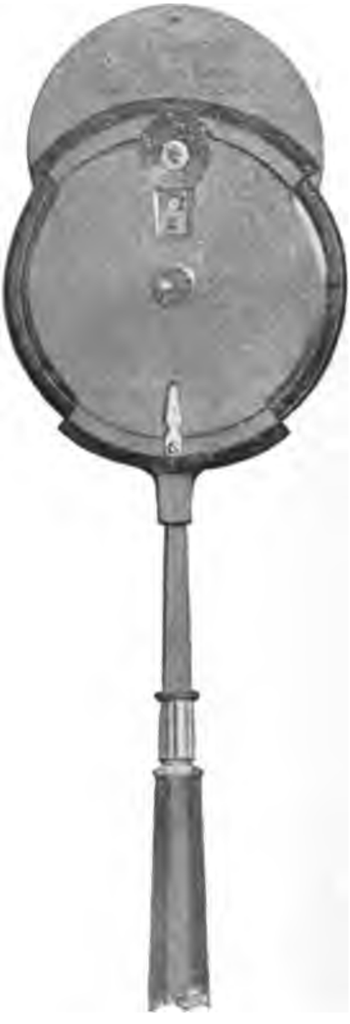

Fig. 2. Back View. (Slightly Larger Than Actual Size.)

# A NEW OPHTHALMOSCOPE.

By Charles H. May, M. D.,

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The features of this ophthalmoscope (Fig. 1 and 2) are simplicity, compactness, excellent mechanical and optical construction, including accurate stops, perfect lenses, proper balancing, and reasonable cost; an important improvement consists in the regulation of size of the various openings, so that there is a minimum of annoying reflex from this cause.

The instrument consists of two superimposed plates, the front disk 43 mm. in diameter holding the convex, the rear disk 41 mm. in diameter containing the concave lenses. There are 14 lenses in each set, the weaker ones being separated by half-diopters, as follows: 0.50 D., 1 D, 1.50 D., 2 D., 2.50 D., 3 D., 4 D., 5 D., 6 D., 8 D., 10 D., 12 D., 15 D., and 20 D., + and — respectively. A greater variety of lenses can be obtained by combinations, but it is not intended that they be employed in this manner, the number when used singly being sufficient for all purposes. The convex lenses are numbered in white, the concave in red, as in most instruments of American manufacture. The strength of the lens in use is shown in an opening in the rear plate.

The two disks can be moved independently of each other, with ease and certainty, through the following arrangement: The disk holding the convex lenses is slightly larger than its fellow, placed in front, and only its extreme edge is milled; the disk containing the concave lenses is slightly smaller, placed behind, its margins thickened, and the milling of its edge is carried a short distance over the posterior aspect. The index finger should be applied to the lower part of the milled edges, thus avoiding contact with the face of the patient. The finger is placed upon the projecting front disk edge, or more posteriorly upon the rear disk edge, according to whether + or — lenses are desired.

The tilting-mirror, concave, of the usual focal distance, is made of very thin glass, and has a 2.5 mm. aperture, the margins of which have been thoroughly blackened; it is supported upon a metal plate, with a central defect of 7 mm.

The opening of the back plate (sight-hole) is 4.5 mm., in diameter, bevelled 2 mm., so as to present a sharp edge. The lenses are 6 mm. in diameter and accurately centered. The opening in the front plate is 6.5 mm. in diameter, with a 2 mm. bevel. Thus, all the openings are larger than those of the mirror and sight-hole—an arrangement which reduces to a minimum the annoying reflexes so frequently found in ophthalmoscopes.

The handle of the instrument is octagon, and the joint is square, on section, instead of round; both of these modifications contribute to easier and firmer grasp. By the introduction of the requisite amount of metal, concealed in the handle, the opthalmoscope is properly balanced and not top-heavy; its entire weight is two ounces.

The instrument is supplied in the usual leather box, with a bi-convex lens of good size, or merely with a soft leather case for protecting the upper part. It is manufactured by W. T. Georgen, 32 East 23d St., New York, and is sold at twelve dollars.

The writer desires to express his appreciation of the manufacturer's courtesy during much experimental work, and his painstaking production of successive models.

# ABSTRACTS FROM CURRENT AMERICAN AND ENGLISH OPHTHALMOLOGICAL LITERATURE.

BY CHARLES H. MAY, M. D.,

NEW YORK.

ASSISTED BY

JULIUS WOLFF, M. D.,

NEW YORK.

QUARTER ENDING DECEMBER 31, 1899.

### The Treatment of Strabismus in Young Children.

SMITH, PRIESTLY, M. R. C. S., Eng. (*The Lancet*, Sept. 23, 1899.) The writer advocates the early treatment of strabismus. His observations relate to the following points: (1) The very early age at which strabismus commonly begins, (2) the delay which frequently occurs before treatment is obtained, (3) the harm which may arise from such delay, and (4) the results which may be obtained from early treatment. The paper is based upon an analysis of 576 cases of concomitant convergent squint.

Regarding the time of life at which strabismus begins, in 60 per cent. of cases the squint began before the children were four years old, and more cases began at three years than at any other age. Two-thirds of the cases had no treatment for at least one year, and half the cases none for three years after the onset of the squint; this delay was due to carelessness in the part of parents, and to a disposition to wait and hope for spontaneous improvement.

Mr. Smith dwells upon the harm which arises from delay. He points out that the most obvious of the visual defects met with among those who squint, is the inability to "fix" properly with the squinting eye when the good eye is covered. "Fixation-power should be tested in the dark room with the help of the ophthalmoscope. The good eye is well covered, the light from the mirror is thrown on the squinting eye and the child's attention is attracted to it.

The position of the corneal reflex in the illuminated pupil tells the observer whether fixation is true or false. False fixation was found in a minority of cases. Why do some eyes fail in this way and others not? Clearly a squinting eye will not lose fixation power so long as the strabismus remains periodic or alternating, for under these conditions fixation is resumed from time to time. False fixation implies that the strabismus is continuous, and monolateral. But even in continuous monolateral strabismus the squinting eye can, in the majority of cases, fix properly when required to do so. What are the determining causes of false fixation? Probably they are many, and some of them beyond our means of observation, but two at least are certain: early onset and long duration." The figures presented showed that there was a close connection between early onset of the squint and false fixation; cases dating from the first two years of life yielded a high percentage, those from the second biennial period a lower one, while those from the third a lower still, until among cases beginning at six years or later, false fixation was almost entirely absent. The loss of fixation reached its maximum frequently among the children who began to squint earliest and went without treatment longest. The writer believes that it is the early squint which impairs the faculty of fixation and not the absence of fixation power which leads to early squint, since no child was found to have false fixation who had not squinted for at least six months.

"The development of vision is a gradual process extending over several years. The new-born child has a mere perception of light. He acquires by degrees the faculties of fixation, fusion and the form perception. He renders these faculties stable by constant use. Fixation is commonly acquired within a few weeks of birth, but has no stability until much later. In the first years of life it is easily unlearned and easily relearned in a perverted form. By long continuance the perverted habit. like the true, is ingrained and rendered permanent. And fixation is not the only faculty which suffers through the early onset of strabismus. The sense of fusion is perverted or destroyed whether fixation be lost or not. Thus, an infant which develops an alternating strabismus retains full fixation power in each eye alone, but loses all sense of normal fusion, and may be entirely unable to reacquire it in later years when the eyes are put straight. The third faculty, that of form perception, probably suffers in like manner. The amblyopia of the squinting eyes probably depends, in part at least, on an arrest of visual development through non-use. The point has been much discussed. According to some authors, the amblyopia is the initial fault, the squint the consequence. No doubt this is the true explanation of some cases, but it is no less probable that an eye which is thrown out of use before its functional development is finished if likely to remain undeveloped and defective. But I will not press this theory of amblyopia from non-use; we can neither prove it nor disprove it, for we cannot test an infant's acuteness of vision at the age at which strabismus commonly begins. Putting this question on one side, it is still quite clear that the young child who squints may suffer lasting detriment unless we interfere to help him."

The writer next discusses the means of treatment applicable in very early childhood, speaking only of children under four years of age. The examination must necessarily be entirely objective, but this is sufficient. We can discover whether the squint is periodic or continuous, alternating or mono-lateral, and whether the squinting eye has true fixation power or not; we can also measure the angle and such measurements are of value during the course of treatment as indications of progressive improvement in some cases, of standstill and the need of operation in others. Finally, with the aid of atropin and the shadow test, we can estimate the refraction. We then have the data required for treatment. Speaking of the means of treatment, the writer mentions three: (1) the diminution of the accommodative effort and the sharpening of vision by glasses, or the abeyance of accommodation through the continued use of atropin, (2) the exercise of the squinting eye or of both eyes alternately, by the use of a pad or shade, and (3) operation.

Discussing the first method, he refers to 96 children who were brought for treatment before they were four years old; of these 55 only are available for study since the others were not treated with any great degree of persistence. Spectacles were ordered for 51 of this group; in some the hyperopia was of low degree (1.5 to 2.5) in the large majority it was of higher degree. 12 of these 51 children were cured completely; seven of these cases had periodic and five had continuous squint. In the majority of cases the glasses were employed in conjunction with a shade, and in a few with operation.

A pad or shade was employed in 38 cases, generally in conjunction with spectacles. The occlusion of the better eye of a young child is not always easy. The shade especially is apt to fail and it is better to place a pad of cotton wool between the spectacle and the closed lids; patience and persistence are necessary in all cases. The value of the pad was beyond all question. Five out of the eight cases of false fixation recovered the faculty of true fixation during the use of the pad. The older the child the smaller the chances of restoring lost fixation. In five cases a strabismus which appeared to be persistently monolateral, became alternating under the use of the pad. In many cases, although the character of the squint remained unchanged, the function of the squinting eye was obviously strengthened and corrected. This form of treatment was useful in checking the habit of suppression, a most convenient habit to the squinter but a great obstacle to the recovery of binocular vision. "It is not only useful in restoring a function which is impaired, but in preventing such impairment. In a minority of cases, chiefly of periodic strabismus, it is superfluous; in long-standing cases where fixation power is irrevocably lost, it is useless; in the larger majority it is a most important means of promoting the recovery of binocular vision."

"Tenotomy was performed in 15 of these 55 cases; on both eyes in 8 cases; on one eye only in 7. Some surgeons make it a rule not to operate for strabismus before the child is five or six years old; some say the best age is ten years; a recent British writer would make it later still. Later operations sometimes give perfect cures; binocular vision is recovered to the full extent. In such cases, probably, the squint did not begin, or at least did not become continuous, at a very early age; the sense of fusion had become ingrained before it was disturbed and was therefore recoverable when the eye was put straight.

But there are many cures, so-called, in which true binocular vision is never reacquired. The question is whether the number of these might not be diminished by operating earlier. Take the case of a child brought when two years old with a continuous strabismus and uncertain fixation-power in the squinting eye. Suppose that by constant use of glasses and pad we get, during the next three months, some diminution in the angle of the strabismus and a return of active fixation-power in the faulty eye, and then month after month no further progress, what are we to do? Shall we postpone operation three or four years and try to persuade the mother to try and supply the pad periodically or continuously during the whole of this time? We shall almost certainly fail in this, and in any case there will be no development of the sense of fusion. The chances are that by the time the child is five years old recovery of binocular vision will be impossible. In such a case I should prefer to operate even at two years old. The operation, of course, will not interfere with further educative treatment. On the contrary, it will expedite and aid it. The tendon should be set back only to a very moderate extent, and this can be done with far greater certainty, according to my experience, by the direct than by the subconjunctival method. Since finally abandoning the latter, two years ago, I have had no case at any age which has seemed to threaten secondary divergence. But even at some risk of divergence a few years later, I would try for binocular vision by operating at two years old rather than abandon it for life. It is far easier at any later time to readjust a muscle than to arouse an undeveloped faculty. Pray do not suppose that I advocate hasty or indiscriminate operation. On the contrary, in every case a persevering effort should be made to do without it; but when all progress by other means comes definitely to a standstill, and operation offers the only prospect of binocular vision, then, in my opinion, it is right to operate, and especially if the child be young. I have operated several times at two years old and more frequently at three and four, and have seen no reason to regret it. The table shows that among 23 children brought for treatment when they were two years old, seven were operated upon; of these, three were under three years of age at the time of operation and others were a little older. At present two of these seven children still have some inward deviation; the others, according to the objective tests, are straight; one of them, who is now old enough for the subjective test, is proved to have binocular vision and I have little doubt that the others have it too."

"Many of the cases in my series are still in course of treatment. Some would have done better if the directions had been carried out. The general result, however, is enough to show that treatment can be employed with benefit at a very early age, and if I may especially insist on certain points, they are the importance of educating the squinting eyes and the value of the corneal reflex of the ophthalmoscope as a test of fixation. To sum up, I would urge that the rational treatment of strabismus is, in many cases, a very early treatment; that in every case the child should be thoroughly examined soon after the strabismus begins, and that this principle should be urged by us upon the whole profession in order that it may reach the public."

### Advances in the Surgical Treatment of Strabismus.

LANDOLT, EDMUND, Paris. (*Journ. Amer. Med. Assn.*, Nov. 25, 1899.) In this paper the author reiterates his well-known arguments against the performance of tenotomy and in favor of advancement in the surgical treatment of strabismus. The treatment, he says, should be based upon the etiology of strabismus as it has been given to us by Donders, and to which there has been but little to add. He refers briefly to important factors in the etiology as follows: Since the movements of the two eyes are associated in the interest of binocular vision, the absence of the latter renders the individual liable to strabismus. The reciprocal direction of the eyes is then controlled by other influences, one of the most important being the association of accommodation and convergence. In virtue of this the stimulus of distinct vision causes excess of convergence and convergent squint in young hyperopes, while the absence of accommodation in myopes results in deficient convergence and divergence. "If, for some reason, binocular vision is absent, the eyes generally diverge, because convergence constitutes an effort, whereas divergence is the state of rest."

Landolt emphasizes the importance of considering strabismus a binocular affection. This is proved not only by its etiology, but also by its results, which show themselves in the limitation of the excursions not only in the deviating but also in the fixing eye.

From the above facts he gathers the following hints for the treatment of strabismus:

1. Since binocular vision governs the normal direction of the eyes, it is the most important factor in the re-establishment of the normal direction, *i. e.*, the treatment of strabismus.
2. When binocular vision is lost, for instance in amaurosis of one eye, we can not expect a satisfactory correction of squint, and operation can produce only a cosmetic effect.
3. When the vision is fairly good in both eyes, we must try, by every means in our power, to restore binocular vision, since it is our most powerful ally in any treatment of strabismus.
4. Since the relation between accommodation and convergence plays such an important part in the associated movements of the eyes, we must make this association our aid in the treatment of strabismus, especially in convergent strabismus. We diminish convergence—by excluding accommodation — with cycloplegic and convex glasses.
5. Since strabismus soon brings about changes in the ocular muscles, these measures alone can give satisfactory results only in recent cases. When the strabismus has existed for a certain time, we have to modify, first of all, the oculo-muscular system of the patient. This is the object of surgical interference.

The frequent performance of tenotomy is, according to the author, based upon the mistaken idea that it increases the field of excursion of the eye toward the side opposite the weakened muscle, an opinion which he has disproved on previous occasions both by argument and measurement. He concludes therefore that "instead of making a muscle feebler than its weak antagonist, by setting it back, we should endeavor to increase the force of the weakened muscle, by its advancement." Usually he finds it necessary to perform advancement on both eyes, but only exceptionally is he obliged to resort to tenotomy in addition. He admits that tenotomy is justifiable in cases of vertical strabismus with diplopia in those cases where the deviation is only a few degrees. After showing further fallacies in the arguments of the supporters of tenotomy, the writer expresses his satisfaction that his views appear to be gaining ground. Finally he adds his method of performing advancement with or without resection, and makes some suggestions as to the methods to be employed for the re-establishment of binocular vision.

### The Prevention of Eye Accidents Occurring in Trades.

SNELL, SIMEON, F. R. C. S., Edin., of Sheffield. *(British Med. Journal*, Aug. 12, 1899.) Mr. Snell's paper deals with the subject of the causation and prevention of eye accidents in iron and steel workers; his residence in Sheffield undoubtedly gives him opportunity for extensive experience in this direction. He calls attention to the enormous destruction to sight occasioned annually by accident, and quotes Magnus' tables, giving 8.5 per cent. of all cases of blindness as due to accident. Statistics are given of 48,262 cases of non-fatal accidents in miners; of these 5 per cent. were injuries to the eye. Of the last 2,554 patients in the wards of the Sheffield Infirmary, 2,038 were men; of these 622 (30.52 per cent.) were admitted for accident. Among the women, only 6.9 per cent were admitted for accidents. The writer's observations have reference only to accidents met with in connection with labor, and particularly such trades as are carried on in Sheffield and the surrounding districts—iron and steel.

The writer describes his visits to various iron and steel works, and explains the duties of the grinders, "chippers," "fettlers" and "dressers," in this way explaining the great liability to foreign bodies lodging in the cornea. In grinding, the foreign body consists of a small fragment of steel, stone or emery; dry grinding is much more hazardous in this respect than wet grinding; fans which draw in sparks and particles flying from the wheel are protective to a certain extent. Grinders derive considerable immunity from "motes" by wearing protective glasses. Though the immediate effect of the damage to the cornea of the grinder may not be serious, the result of subsequent ulceration must be kept in mind, in many cases.

Mr. Snell speaks of the workmen who become skilled in removing foreign bodies from the cornea of comrades, their expertness and the varied forms of implements which they used for this purpose. Sometimes such removal was skillful, but not infrequently infection resulted from unclean instruments employed.

The writer presents a table of 359 consecutive cases of eye accidents to males, which were so serious as to require admission to the hospital ward; 173 of these were due to iron and steel. Besides iron and steel splinters, chips, etc., injury results from molten metal, sparks, flashes, etc. Attention is called to the fact that the danger is not only to the worker himself but to those around. "It is obvious that men engaged in work which causes the splinters to fly about so freely, should be so arranged as not to be chipping against their fellow-workmen, or in a direction from which passers-by may approach. This is managed in some works by getting the men to chip against a wall, though not too close to it, or again by interposing a canvas screen between sets of workmen." A pneumatic chipper is used when the metal is comparatively soft, and by its employment the pieces of metal do not fly, but merely curl up and fall over.

Mr. Snell next takes up the question of PREVENTIVE MEASURES. "The knowledge which I have acquired from coming in contact with workingmen who have been injured, and visits from time to time to many of the principal works, has long since satisfied me that much of the destructive injury to sight which is constantly coming under one's observation is preventable, and that means can and should be adopted to lessen the risks to sight which are at present associated with such important industries. My experience has shown me that there is less difficulty in enlisting the support of the employers than the assent of the men to adopt precautionary measures. With the Compensation Act in force, I have no doubt the assistance of the masters will even be stimulated. It only recently came to my knowledge that one firm had made it compulsory on men engaged in "chipping," "fettling" "turning," and other work in which iron and steel splinters were liable to fly off and endanger sight, to wear protectors, which were provided at the expense of the firm. This decision was taken in consequence of a workman being blinded by a "chipping," and it is easy to understand, while creditable to their humanity, how such a course, if it tends to preventing of loss of sight, is likely to be a considerable pecuniary saving.

*Eye Protectors:* In considering what kind of protectors men should use, certain points must be borne in mind. The cost must be very moderate. and covering over the eyes should interfere with the sight as little as possible, if at all. Among iron workers, glass is perfectly out of the question. Even thick rock crystal, which has been suggested for some kinds of work, in consequence of its thickness and peculiar manner of fracture, would hardly do. There are a variety of protectors in the market, but they have been little used. Gauze wire, fitting close to the eye like a cup and attached to the head by a string, is employed by stone-breakers, and in some iron works. I have photographs of men working with these protectors over their eyes. They are taken from men actually engaged at their daily occupation at the works, to which protection has already been made, where the men are practically compelled to adopt protectors. They complain of them as being hot and interfering with sight, but there is no question that such protectors do afford considerable immunity from accident. Another practical point about protectors is that they should not be liable to rust. For this reason galvanized iron wire, or, better, aluminium wire, is of service. The mesh should be sufficiently strong and fine, and sufficiently close to prevent, as far as possible, even small chippings passing through it and yet to interfere with sight as little as need be. I have had experiments made by allowing men engaged in fettling to "chip" against wire gauze which has been suspended for the purpose, to ascertain how far a mesh answered before deciding to adopt a given size. Then acting on a suggestion derived from Bronner's shield for operation cases, I have this netting made into protectors which cover the eyes and the adjacent parts. The portion over each eye is bulged forward so as to allow very free-play to the eye underneath, and the convex surface will be a greater protection than one merely flat would be. I have supplied workmen with these protectors, who have used them for chipping, steel melting, and other dangerous iron and steel work. I learn that they are regarded as satisfactory, that they answer their purpose well as protectors, and that the interference with sight is very little."

Conclusions: the writer sums up his suggestions as to the means for protection as follows:

"1. The grinder will find that large glasses made of plain glass, or indeed his own spectacles, should his refraction require their use, will afford great protection. Or he may use other protectors made with glass in front and surrounding it.

2. The use of protectors should be compulsory for those workers in iron and steel, whose employment renders them liable to be injured by iron or steel splinters, or are exposed to danger from molten metal.

3. The gauze eye shield I have described will, I believe, answer the purpose well. The cost is low, and it is worth the employers' while to supply their men with them.

Other means to be adopted are: (*a*) The use of a pneumatic chipper whenever practicable; (*b*) the proper arranging of the men at their work, and (*c*) the use of screens so as to avoid injury to their fellow-workmen and to passers-by.

It is my belief that a consideration of the facts I have advanced will lead to the conviction I have myself long held, that very many eye accidents associated with trades are preventable, and to the view that, such being the case, preventive means should be adopted."

### Locating Foreign Bodies in the Eye: Results of Two Years' Work with the Roentgen Rays.

WILLIAM M. SWEET, M. D., of Philadelphia. (*Phil. Med. Journ.*, Oct. 14, 1899.) "The ease and accuracy with which the presence of foreign bodies in the eyeball or orbit may be determined and their exact position indicated by means of the Roentgen rays, renders this a most valuable method of diagnosis in injuries to the eyes when the cloudiness of the media prevents the use of the ophthalmoscope. At the meeting in Philadelphia in 1897, I presented to this section the results of experiments with the X rays in locating pieces of metal in the eye, and described a method of determining the position of the body in the eye from the shadow cast upon the photographic plate when studied in relation to the shadows of two metal indicators of known position. With the view of showing the value of the X rays in ophthalmic surgery, and the accuracy of the method of localization, I briefly present the results of my work during the two years since reading the first paper.

During this time I have employed the rays for diagnostic purposes in 35 cases of injuries to the eyes, in which the character of the traumatism indicated the possibility of a foreign body having entered the globe. In 13 cases there was shown to be no foreign body lodged either in the eye or structures immediately adjacent, and the findings were verified in many of the patients by the subsequent removal of an opaque lens or by clearing of a previously clouded vitreous. In the remaining 22 cases there was shown to be a foreign body either in the eyeball or orbit, the localization being verified in 16 cases by magnet extraction or by enucleation, and in two cases by the ophthalmoscope. Three cases were gunshot injuries, and no operation was performed for the removal of the shot, while one patient did not reappear after the radiographs were made."

The writer gives a brief history of the 18 cases in which the findings of the radiographs were verified, and adds: "The above report of cases indicates an accuracy in the determination of the situation of foreign bodies in the eye by the use of the Roentgen rays that is, I believe, not equaled by any other means. The correctness of the determinations is not influenced by the character of the metal, nor by the situation of the body, whether in the posterior or anterior portion of the globe or in the orbit. The results in the 16 cases that came to operation were as follows:

| | |
|---|---|
| Vision $\frac{10}{20}$ | 1 case. |
| Vision $\frac{10}{70}$ | 1 case. |
| Vision $\frac{10}{200}$ | 2 cases. |
| Light perception | 4 cases. |
| Enucleation | 8 cases. |

No fair comparison, however, can be made of the above summary with the results achieved by other operators, notably Hirschberg, since the majority of the cases were not seen until destructive inflammation had already begun. In 3 cases no attempt was made to extract the metal by the magnet, and in 2 others, the body being copper, forceps extraction was necessary. Several of the cases showing only light perception had cataract, the removal of which would have probably increased the visual acuity.

Until there is a more general appreciation of the importance of early diagnosis in injuries of this character, the percentage of failure to save the eye must necessarily be large. A foreign body in the eye is always a source of danger, and its presence should be promptly determined and the metal as promptly removed. I believe that in every case of injury to the eye from flying pieces of metal, where the clouded media prevents the use of the ophthalmoscope, a radiograph should be made at once to determine whether the metal has lodged in the eyeball. If the examination be negative, both surgeon and patient are reassured; whereas, if the radiographs indicate that a foreign body is in the eye, an attempt to remove it may be made before a firm exudate has formed about it. To wait until inflammation has subsided, in the hope of determining the situation of the metal by the ophthalmoscope, consumes valuable time and menaces the safety not only of the injured but of the sound eye."

### Injuries to the Eyes from Electric-Light Flash.

WILLIAM H. FOX, M. D., of Washington. (*Jour. Am. Med. Ass'n.*, Oct. 7th, 1899.) The writer calls attention to the fact that injuries to the eyes from electricity give a peculiar train of symptoms, more or less characteristic; to this condition, Ljubinski has given the name "Ophthalmia photo-electrica". The typical symptoms are illustrated by a case reported by Dr. Fox as follows: Temporary blinding by the flash, usually of a short circuit; some time after, intense pain in the eyes and head with marked photophobia. The eyeballs show intense hyperaemia and the pupils are contracted to the size of a pinpoint. The lids are swollen, experience a burning sensation and a feeling of rawness and as if there were foreign bodies in the eyes. In severe cases, there may be added an actual burning of the skin of the face, the lashes and corneae. According to the severity of the case the symptoms may pass off in a day or two, or may last for many weeks. Some authors report these effects as coming on immediately; but most authorities mention an interval of freedom from symptoms of from six to fourteen hours.

The writer discusses the various theories which have been advanced as to the cause and effects of these injuries. Gould thinks they are not caused by the excessive action of the chemical rays, but by the great number (intensity) of light-waves of ordinary length. Terrier agrees with this view. On the other hand Charcot believes the evil effects due to the chemical rays, comparing the injury to sunburn, an opinion favored by several other writers. Burnett explains the temporary freedom from pain by supposing that the corneal epithelium is injured by the heat rays, that it gradually dies and becomes detached from the cornea, leaving its nerve filaments exposed, after which the pain begins. Several other theories are considered in a paper by Bull, who finds a similarity between "ophthalmia electrica" and the symptoms of snow-blindness and instalation of eserine solutions of excessive strength; in all of these conditions there is extreme irritation of the anterior portion of the eye with photophobia, hyperaemia of the conjunctiva, pain and marked contraction of the pupil.

The author inclines to the following theory: "There is an intense irritation of the retina from the light rays, causing an instantaneous hypercontraction of the pupil and ciliary muscle, followed by a temporary paralysis of the ciliary nerve. The intense hyperaemia which comes on later is due to the regaining of their functional activity..... ....... I consider the light rays to be the ones that do the damage."

The treatment advised is an attempt to relieve the intense hyperaemia of the ciliary body and iris, and its accompanying pain and discomfort. These indications are best met by iced cloths applied to the lids and installations of a solution of atropin. The injury is rarely or never permanent; in the great majority of cases, the symptoms subside in from twenty-four to forty-eight hours.

### Interstitial Keratitis in Acquired Syphilis.

LAWFORD, J. B., of London. (Report of October Meeting of Ophthalmological Society of the United Kingdom, *British Med. Journal*, Oct. 28th, 1899.) Mr. Lawford read notes of 5 cases (4 males and 1 female). In three of the cases the evidence of syphilis was indubitable, in the other two it was open to question. In the first case the keratitis developed four and a half months after the primary lesion, which was situated on the lower lid of the eye, whose cornea became involved. In the second case an interval of eleven months elapsed between the primary sore on the penis and the development of the keratitis. In the other three a longer period separated the primary lesion and the corneal affection. Mr. Lawford drew attention to certain features in these and other previously recorded cases wherein they differed from the keratitis of inherited syphilis. In the acquired form the attacks of keratitis seemed to be of shorter duration and less severity, and in most instances only one eye became affected. The prognosis also seemed better, as in the majority of cases complete or almost complete restoration of the transparency of the cornea resulted. He considered that in three of his cases there was good reason to believe that the keratitis was a syphilitic affection; in the other two cases he merely noted the occurrence of an interstitial keratitis in patients who had probably had syphilis some years previously.

### Albuminuric Retinitis.

West, Samuel, M. D., F. R. C. P., of London. (*British Med. Journal*, Oct. 28th, 1899.) "In its typical form albuminuric retinitis is characteristic and pathognomonic. Yet upon many important points the statements of different authorities are very conflicting and difficult to reconcile. Kidney diseases fall into two great groups according as dropsy is a prominent symptom or not, and the kind of albuminuric retinitis most frequently met with in these two groups will, I think, be found to be different. The lesions of albuminuric retinitis consist in white patches, hemorrhages, and exudation, variously combined with each other, and lastly quasi-inflammatory conditions.

The Exudative (Extreme Inflammatory) Form: In this form the changes are widespread and extreme, and closely resemble what is seen in other forms of acute neuroretinitis. Dropsy is not very common in granular kidney, so this form of albuminuric retinitis rarely occurs in this disease, but is more frequently met with in the other group, namely, that of parenchymatous nephritis. Complicated as the question is we seem to be justified in drawing these conclusions: that this form of albuminuric retinitis is of an exudative inflammatory type, that it is probably of toxic origin, and related rather to the cellular degeneration than to the interstitial fibrosis.

If the view I am expressing prove to be correct, it follows not only that the kind of albuminuric retinitis which prevails in the two forms of renal disease is different, but that it has a different diagnostic value in the two cases. In parenchymatous nephritis the diagnosis of the disease is obvious and the albuminuric retinitis is an interesting by-phenomenon only. In granular kidney the diagnosis may be uncertain until all doubt is dispelled by the discovery of the characteristic eye changes. It is to this group that some of the cases of albuminuric retinitis of pregnancy belong. On the other hand, many more of these cases in pregnancy belong to the degenerative group and are evidence of granular kidney. Puerperal eclampsia occurs in either form; in the former rarely without dropsy, and in the latter not infrequently without.

THE DEGENERATIVE FORM: The degenerative form of albuminuric retinitis consists of white patches and hemorrhages. Of these the most characteristic are the white patches. There are, I believe, two kinds of white spots, the one forming bright spots, glistening like fish scales, the other not so glistening or so sharply defined, but woolly in appearance. The former are the result of degenerative changes, and their brilliancy depends on the presence of minutely refractive oil drops or even cholesterine crystals; the latter are often small patches of exudation only. The former are of slow development, and unlikely to disappear at all, or only slowly and after a long time; the latter, however, may come and go rapidly.

In parenchymatous nephritis the diagnosis of renal disease is usually obvious, whether there are white spots or not. In granular kidney, however, the diagnosis may be uncertain until the eye changes are discovered. The white spots, whether they be really exudative or degenerative, have therefore, in granular kidney a diagnostic value, which they do not possess in the other forms of nephritis.

Early as the white patches or degenerative changes are, they are preceded by and result from still earlier changes in the vessels. Although the silver-wire arteries are no doubt ophthalmoscopic evidence of the vascular degeneration, as are also the hemorrhages and white spots, it does not follow that the vessel necessarily show the white silver-wire streaks before the other lesions are visible.

Of the hemorrhages which occur in albuminuric retinitis, it is not necessary to say much. Similar hemorrhages may occur in both the exudative and in the degenerative forms, but they are probably produced in different ways in each case. In the latter they are the consequence of the vascular degeneration, and are due to the rupture of the diseased arteries in the retina, as in other parts of the body. In the former they are generally due to the rupture of over distended veins, consequent on the pinching to which the veins are subjected as they pass through the swollen disc. Paradoxical as it may seem, it is in the so-called extreme forms of albuminuric retinitis -or, as I should call them, the exudative forms,—that the prognosis both in respect of life and in respect of sight is not nearly as grave as it might appear to be; for if the kidney mischief recover, the eye lesions may resolve and the sight be completely restored.

If, as in pregnancy the cause return, the retinitis may also return, and with each successive pregnancy the prognosis in respect to sight of course becomes worse. In respect to life, the prognosis is that of the renal disease, and all that I think the presence of albuminuric retinitis in these cases does, is to show that we have a form of parenchymatous nephritis to deal with of a somewhat unusual severity. The white patches of granular kidney rarely disappear, but they are often present without much defect of sight. The ophthalmoscopic changes in the vessels are important as evidence of an arterial degeneration which is not limited to the eye, and it is a visual evidence of the risks to which the patients are subject from the disease of the vessels elsewhere—for example in the brain.

I may bring this communication to a close by summing up the facts which I think justify the drawing of a sharp distinction between the two forms of albuminuric retinitis, the degenerative and the exudative. They stand in strong contrast with each other in the following respects:

"1. Of the forms of disease with which they are usually associated: the degenerative with granular kidney; the exudative, especially with parenchymatous nephritis.

"2. Of their nature and cause: the exudative being inflammatory and probably toxic in origin, the degenerative consequent on vascular changes, and more or less mechanical in origin.

"3. Of sight: for the exudative, even in the extreme forms, may recover with little or no defect of sight, but with the degenerative, if there is any impairment of sight, it is usually progressive.

"4. Of diagnostic value: the exudative being an interesting by-phenomenon of chronic parenchymatous nephritis, an affection the existence of which is obvious enough, while in granular kidney the degenerative often makes the diagnosis certain in cases which have been hitherto obscure.

"5. Of risk to life, while in both cases it indicates a grave form of renal disease which may of itself prove fatal, in granular kidney it indicates in addition all those dangers to which arterial disease exposes the patient.

I think, therefore, that the distinction is not only justified by the facts, but explains many of the apparent contradictions which are made by different authors."

### On Acöine as a Local Anaesthetic in Sub-Conjunctival Injections.

CARTER, ROBERT BRUDENALL, F. R. C. S., Eng., of London. (*The Lancet*, Oct. 21, 1899.) The writer begins his paper with a brief allusion to the value of sub-conjunctival injections of mercuric salts, but remarks that the subsequent pain, even when cocaine or holocain was employed, furnished a great and valid objection, to the process, "and rendered many practitioners justifiably unwilling to have recourse to it as long as a good result could be expected from the use of milder means." He believes that Acöine removes this objection.

"In the number of *La Clinique Ophtalmologique* of June 25th last, Dr. Darier, one of the editors of the journal, published the first account which I had seen of a new preparation called Acöine, which he declared to be a non-poisonous local anaesthetic having a very prolonged action; and he described several cases in which its use had rendered the sub-conjunctival injection of cyanuret of mercury painless. The statement seemed to me to be so important and the effect so valuable that I obtained a supply of the preparation, and my trials of it completely confirm Dr. Darier's assertion. After injecting a mixture of equal parts of a solution of cyanuret of mercury of the strength of 1 in 1000, and of a solution of acöine of 1 in 100, no pain has been produced even when the injection has been a large one, and has been followed by considerable chemosis and even by swelling of the lids. Following the example of Dr. Darier, the solvent for both preparations was sterile normal saline solution. The conjunctiva was cocainized for the puncture, and the injection was made under the strictest precautions for the avoidance of sepsis. The only complaint made has been a sense of weight and inconvenience from the swelling, which, of course, passed away in the course of a very short time. Dr.Darier's acöine is made by the establishment of Hayden, at Radebeul, near Dresden. It is a white crystalline powder, soluble in water to the extent of 6 parts in 100. The solution keeps well in the dark and is strongly antiseptic. It may possibly interest some readers to know that acöine is a "Diparaanisylmonophenethylguanidinchlorhydrate", but the fact conveys very little information to me. I am content to know that it promises greatly to facilitate the treatment of some of the more intractable inflammatory infections of the eye, and that it takes away the only serious objection to the employment of a method which, in properly selected cases, appears to me to be of great and incontestable value."

### Relative Toxicity of Cocain and Eucain.

PECK, A. H., M. D., D. D. S., of Chicago. (*Journ. Amer, Med. Assoc.*, September 9th, 1899.) The writer describes the physical properties of these local anesthetics and mentions the advantages and disadvantages of both. He experimented extensively with these agents, using guinea-pigs as subjects. These experiments are described in detail and finally the results are recapitulated as follows:

"1. The action of cocain is inconstant; one never knows whether the symptoms occasioned by like quantities of the drug, in animals or individuals, under like circumstances, will be similar or dissimilar.

"2. The action of eucain is constant. The symptoms occasioned by the use of like quantities in animals, under like circumstances, and as far as my experiments have gone, in different individuals also, are the same.

"3. The first action of cocain on the heart is that of a depressant, and on the respiration it is that of a mild stimulant, the after effects being, on the heart, that of a decided stimulant, and on the respiration, that of a decided depressant.

"4. The first action of eucain on both the heart and respiration is that of a stimulant, the after-effects being that of a decided depressant.

"5. Cocain causes death in animals by paralysing the muscles of the respiratory apparatus, the heart's action continuing in a feeble way for a brief period after breathing ceases.

"6. Eucain causes death in animals by paralyzing the muscles of the heart and of the respiratory apparatus, they cease to operate simultaneously.

"7. Eucain in toxic doses nearly always causes nausea, and occasionally vomiting.

"8. Cocain is much less nauseating and scarcely ever causes vomiting.

"9. Eucain is decidedly a diuretic, causing renal discharge in a majority of cases in which a toxic dose is used.

"10. Cocain is not a diuretic to any appreciable extent, renal discharge having occurred in only one instance in connection with all my experiments.

"11. The pupils of the eyes, in nearly all cases of cocain poisoning, do not respond to light and the eyes are more or less bulging from their sockets.

"12. The pupils in most cases of eucain poisoning do respond feebly to light, and the eyes rarely ever bulge from their sockets.

"13. The action of toxic doses of eucain is more like that of a paralyzing, tetanoiding, convulsion-producing agent, than it is like an anesthetizing one, the plantar and cremasteric reflexes nearly always responding.

"14. Toxic doses of cocain cause general anesthesia in connection with other symptoms in the majority of cases.

"15. True tenanus, of all striped muscles of the limbs, and Cheyne-Stokes' breathing nearly always occur with the use of cocain, but seldom does either occur when eucain is used.

"16. Cocain is at least three times more toxic than beta-eucain, and alpha-eucain is as toxic as cocain.

"17. Boiling does not destroy the efficacy of cocain, but it does modify it, and boiling in no degree lessens the efficacy of eucain.

"The above deductions have been made only after many experiments in connection with each individual point. I have observed many interesting features in connection with the relative worth of these drugs as local anesthetics, but this paper is not to treat of this phase of the work. There is much experimental work yet to be done in this connection."

### The Use of Euphthalmin: A New Mydriatic.

JAMES HINSHELWOOD, M. A., M. D., F. F. P. S. G., of Glasgow. (*Ophthalmic Review*, Nov. 1899.) The writer records the results of careful and extensive trial of this new mydriatic which "is comparatively free from the disadvantages associated with all the mydriatics hitherto employed." This remedy is a synthetic preparation, occurring in the form of white crystalline powder, very soluble in water. The 5-per-cent solution was found to be the best strength, producing dilatation rapidly, with a minimum of discomfort to the patient; weaker solutions acted very slowly and stronger ones increased the disadvantages associated with the use of the drug, with but slight increase in the rapidity of mydriasis. The 5-per-cent solution did not act quite so rapidly as the one-per-cent solution of homatropin, but it produced quite as great dilatation of the pupil.

The writer made a large number of comparative experiments with euphthalmin and homatropin. The maximum effect of the former was produced most rapidly by instilling three separate drops, with an interval of two minutes between the drops. The preliminary use of a drop of one-per-cent holocain solution increased the rapidity of action of the euphthalmin and put it on a par with homatropin, producing a maximum dilatation in 20 minutes.

Darier is quoted as suggesting the use of euphthalmin in doubtful cases when it is desired to ascertain if iritis is present. In such cases, if iritis exists, atropin will have no ill effects; but if the case is one of simple peri-corneal hyperæmia, etc., one will have caused 8 or 10 days of paralysis of accommodation. If dilatation had been effected with euphthalmin, quite as accurate a diagnosis could have been made without causing any of the inconveniences following atropin.

The writer sums up the chief qualities of this new mydriatic as follows:

"1. Two or three drops of the 5% solution of euphthalmin will dilate the pupil fully in from twenty to thirty minutes.

"2. This dilatation may be considerably accelerated by the preliminary instillation of a drop of 1% solution of holocain.

"3. There is produced a paresis of accommodation, variable in amount but always of a very transient character, passing off completely in from an hour and a half to two hours.

"4. There is no discomfort or feeling of irritation produced by the instillation of the drug.

"5. There is no injection of the conjunctival vessels; no tearing and no alteration of the cornea.

"6. There is no elevation of ocular tension.

"7. No toxic symptoms have ever been observed from its use.

"8. The mydriasis disappears completely in from eight to twelve hours.

We are yet in search of the ideal mydriatic, such as would dilate the pupil rapidly and with certainty to its maximum; would have no effect whatever upon the accommodation; would allow the pupil to return rapidly to its normal condition, and would have no other effect upon the eye. Euphthalmin, although it does not completely fulfill all these conditions, yet approximates to them more closely than any other mydriatic hitherto used in ophthalmic practice, and will therefore prove a very valuable addition to the pharmacopœia of the ophthalmologist.

### Test Types for the Determination of Acuteness of Vision.

LANDOLT, E., Paris. (*British Med. Journal.*, Sept. 23., 1899.) After some general remarks upon the normal acuteness of vision, the writer mentions some objections to the test-types of Snellen as now employed. Letters can not be used for the illiterate and some persons, with equal vision, recognize them more easily than others, intelligence playing an important part. Furthermore some letters are more easily recognized than others. But the main objection, he finds, is that letters as tests do not answer to the definition of the acuteness of vision. "The letters would be serviceable only if, for their recognition, the separate perception of two points under a given angle would be required." These conditions are complied with by only a very few letters, for instance: R and B, C and O.

The test type recommended by Landolt "consists of a black circle on a white ground, presenting in some direction a gap which, for the unit of acuteness of vision, corresponds to an angle of one minute." The thickness of the circles corresponds to that of the letters in Snellen's type, but there is the advantage that in the figures the black is constant, whereas in letters it varies; for example, in the proportion cf 3 to 4 for an L and an E. The dimensions of the figures are such that at 5 metres they represent a visual acuity ranging from 0.1 to 2, the decimal system introduced by Monoyer, having been adopted.

These test types, the writer claims, possess none of the disadvantages attributed to those used hitherto. They can be shown in a mirror without being printed reversed. The card is square, not rectangular, thus allowing a more uniform illumination if a reflector is used. These test types "realize much better than letters the principle of the acuteness of vision, the determination of the 'minimum separabile'; they exclude, as much as possible, intellectual functions, and being themselves uniform and the same for the illiterate as for the educated of all nations, they represent a true unit, the essential and fundamental condition for every measure and examination."

**Eye Strain in its Relation to the Vertical Centration of Lenses.**

DUNN, BURTON L., of Syracuse, N. Y. *(Arch. of Ophthal.*, October, 1899.) The writer considers it somewhat remarkable that in the literature of refraction there seems to have been no adequate recognition of the important part which the centering of lenses plays in relation to vertical strains. He finds that frequently glasses for constant wear are centred for the far point, and due weight is not given to the fact that the patient reads, normally, through the lower part of his glasses at a point about 10 mm. below their centers. Since the decentration of both lenses above this, the reading point, is usually equal, it is evident that three refractive errors may result: "(1) An astigmatic error resulting from the oblique course of the visual rays through the periphery of the lens. This may be combined with, (2) A prismatic error equal in both eyes; or (and most important) (3) In unlike lenses, an unequal prismatic error."

The author considers that astigmatic error very probably causes blurring and eye strain when the lenses are strong, unless the patient overcomes the defect by tilting the glasses. The equal prismatic error rarely gives great discomfort, except perhaps in the case of strong concave lenses which then act like prisms with the bases down. The greatest amount of eye strain is shown in those cases in which there is unequal prismatic effect at the near point, which occurs when the refraction is corrected by unlike lenses; the result is a vertical heterophoria varying with the difference in the strength of the two lenses.

In common practice these errors are sometimes corrected by a vertical prism or by tenotomies, but both of these methods are not permanently satisfactory. "The most effective method of correction is the decentering downward of both lenses to the reading point, thus eliminating both the astigmatic and prismatic errors. These errors, it is true, are transferred reversed to distant vision, but they are here partially overcome by an altered position of the head, and give little trouble."

The writer illustrates his contention by the histories of a number of cases which he has observed. He considers that, theoretically, the best glasses would be bifocals containing the same correction in both segments, with separate centers for distance and reading; but practically these are usually unnecessary.

### The Stereoscope as a Test for Inefficiency of the Ocular Muscles.

BULL, GEORGE J., Paris. (*Ophthalm. Review*, September, 1899.) The writer has found the Holmes stereoscope useful, not only in determining the degree of ease or difficulty with which binocular single vision is attained and in re-establishing the latter in patients who have lost it, but also in determining diagnostically the amplitude of fusion. For this purpose he has made a scale to measure the angle of convergence of the visual axes when the test-cards are properly seen at any distance. The test-object consists of a circular disc for each eye presenting a dot or cross and called the "controller." The controllers serve to indicate whether fusion of the images of the two eyes has really taken place. The scale indicating the degree of convergence is based on a stereoscope of certain definite dimensions, given by the writer. By means of the table given it is demonstrated that the Holmes stereoscope is capable of measuring any amplitude of fusion of 30°, namely, from 20° of convergence to 10° of divergence.

In order to be able to determine whether a patient can converge more than 20° while fusing the test-cards, the writer has had recourse to the "stereoscope for exercises with crossed axes." With this "the patient looks through a diaphragm so placed that his right eye can see only the disc on the left side of the test-card, and his left eye can see only the disc on the right." In this way convergence of 40° can be measured.

"The advantage of the Holmes stereoscope over other tests is that you conduct the examination not under unnatural and bewildering circumstances, as in the case of tests with prisms in looking at a candle flame with or without a colored glass, but under circumstances closely analogous to the ordinary use of the eyes in reading or writing. Consequently you are able to follow with comparative ease and certainty, and without much danger of error by reason of subjective mistakes of the patient, exactly what happens to the patient's eyes in the effort to conduct the ordinary occupations of life."

### Physiologic Variations in the Size of Mariotte's Blind Spot.

HANSELL, HOWARD F., of Philadelphia, Pa. (*Amer. Journ. of Ophthalm.*, Nov., 1899.) The writer calls attention to the fact that the study of Mariotte's blind spot has never been exhaustive; that the original delineations have been handed down through successive generations, and have always represented one and the same eye. He measured the blind spot in both eyes of 37 emmetropes, 11 hyperopes and 4 myopes. The method adopted was to mark a small black cross on a clear sheet of paper and with a black-pointed pencil, chosen so that it represented a sharp contrast in the shade with the paper; fix the patient's head at exactly 33 cm. distance, and, with the second eye bandaged, the pencil is moved from the seeing field into the blind field, thus making the projection of the disc upon the paper appear at its smallest and probably truest limits. The following results are noted:

"1. In comparing the two eyes in emmetropia we find that the distance from the center of the blind spot to the fixation point was a trifle longer, on the average, in the right than in the left eye. This difference is insignificant and the two distances may be considered equal. In hyperopia the average distance was 3 mm. longer in the left than in the right eye, while the longest and shortest distance was almost the same in each eye. In myopia the cases were so few that the averages may be misleading, and a larger number of cases might show different results. The average distance in the left eye was more than 5 mm. greater than in the right eye, and the longest distance as well as the shortest were both found in the left eyes. In comparing the distances in the three varieties of refraction we find that the greatest distance was found in myopia as well as the shortest distance. The average distance in emmetropia and hyperopia was almost identical, while in myopia it was fully 5 mm. greater.

2. The center of the blind spot was, with few exceptions, below a horizontal line running through the point of fixation. In hyperopia the distance averaged 10 mm. in the right and 7 mm. in the left eye, while the greatest distance was 25 mm. and the shortest 2 mm. In myopia the distance averaged 9 mm., the longest 19 mm. and the shortest 5 mm. In emmetropia the average was 10 mm., the longest 22 mm. and the shortest 2 mm. These figures show that the center was equally distant from the horizontal line in emmetropia and hyperopia, and was 1 mm. less in myopia.

3. The shape of the blind spot in emmetropia was, with few exceptions, oval, with the long diameter in the vertical or near the vertical axis. The exceptions were four in number; in four the outlines were circular, and in two

the long axis was horizontal. This would seem to prove that the optic disc is seldom circular, but in the majority of cases oval, with its long axis vertical; and in a small minority oval, with its long axis horizontal, and that the shape is independent of the refraction

In emmetropia the long diameter of the blind spot averaged 31 mm., in hyperopia 34mm., and in myopia 38 mm. The longest was in hyperopia and measured 65 mm., the shortest was also in hyperopia and measured 15 mm. In emmetropia the transverse diameter measured 26 mm., in hyperopia 27 mm., and in myopia 35 mm. the longest was in myopia 45 mm., and the shortest in hyperopia, 15 mm. From these figures it will be seen that the size of the blind spot was decidedly greater in myopia than in other states of refraction. Very few pairs of eyes show equal measurement in either the distance of the blind spot from the fixation point or in the position or size of the blind spot, and variations, as great as existed between the eyes in different individuals were found in the eyes of the same individual.

The ophthalmoscopic appearances were noted in all cases examined and only healthy eyes were chosen. Only an approximate estimate in the situation and size of the blind spot could be determined by the ophthalmoscope, except in cases of myopia; here, the size of the blind spot corresponded with the degree of choroidal and retinal changes surrounding the disc, hence with the size and shape of the staphyloma. The practical conclusions that I should deduce from this analysis is that the blind spot has a greater bearing in measurement of the field of vision than has been accorded to it, and might, in the absence of knowledge of its size, be mistaken for a scotoma of disease. The discovery that a portion of the field measuring 5 by 4 cm. of irregular outline between the tenth degree and twentieth degree mark in the perimeter and in cases including both is blind, might lead to confusing conclusions as to the real character of the field. Examination of the eye and nature of the blind spot in cases of optic neuritis, choked discs, and glaucoma, would probably be useful in delineating the course of the disease and the value of therapeutics, its increase denoting advance, its decrease retrogression, of the affection. By carrying on this investigation and including the various types of disease which possibly modify the relations of the blind spot with the field of vision, I hope to arrive at data of diagnostic and therapeutic value.

# ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

## Quarter Ending December 31, 1899.

BY

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### Lattice-Like Keratitis.

HAAB, PROFESSOR, of Zurich. (*Zeitschrift fur Augenheilkunde*, Bd. II, Heft 3.) This variety of keratitis, which was first described by H. Biber in 1890, is made the subject of a recent contribution by Haab. He reports seven cases. The disease appears to affect both eyes and is usually seen in advanced life. It has been observed in members of the same family. In its earlier stages the affection can only be detected by the most careful examination with the oblique illumination. At first the changes resemble those of interstitial keratitis. There is generally very little congestion, and photophobia and lachrymation are exceptionally present. With a strong convex lens (+ 16 D) in the ophthalmoscope, the changes can be clearly seen and they consist of very fine cloudings of the cornea arranged in lines interlacing one another like lattice work. These grayish lines lie in the anterior layers of the cornea, and corresponding to them we will notice slight ledge-like elevations of the surface of the cornea. In addition to these lines and ledges there will be seen very minute cloudings which resemble specks and points, and at each of these locations a slight elevation will be noticed. By oblique illumination these changes will have a bluish gray appearance and by transmitted light they will appear dark, so that they may be confounded with the vessels which remain behind after parenchymatous keratitis. Gradually the process extends, the lattice work arrangement of the lines becoming more complicated and the points more numerous. The epithelium becomes roughened and indurated. The anterior part of the substantia propia becomes more and more cloudy. Occasionally ulcers are seen. Sometimes the disease follows a very mild course and is attended with a very slight impairment of vision. In the majority of cases seen by Haab the disease was of the malignant type, so that in spite of treatment and the fact that the patients were of the better class vision was gradually lost. The etiology is shrouded in mystery as all the patients were otherwise perfectly healthy. The prognosis is very doubtful. The most efficacious treatment proved to be the yellow salve. It may be mentioned here that Dimmer has very recently reported three similar cases where the patients were sisters.—(*Zeitschrt. für Augenheilk.*, Oct., 1899.)

### The Use of Strong Sublimate Solutions in Ophthalmic Practice.

GUTTMANN, DR. EMIL. (*Deutsche Med. Wochenschr.*, 1899, 44) Guttmann recommends very highly the instillation of a three per cent. solution of sublimate in muco-purulent conjunctivitis. Such a form of conjunctivitis is frequently seen as a result of infection with the Koch-Weeks bacillus, also in the strumous constitution, and in such instances is usually designated eczematous conjunctivitis or scrofulous conjunctivitis. The same condition is seen after measles and scarlet fever. In all these varieties of the same affection three or four applications of a three per cent. solution of sublimate will often change the entire character of the disease and convert it into one which is readily curable by other more commonly used remedies. The effect of this agent upon the secretion is remarkable. The purulent character of the secretion soon disappears. The acute forms of trachoma and follicular conjunctivitis often assume the guise of a muco-purulent conjunctivitis, and in both of these cases sublimate solutions will be found most helpful. It is interesting to note the fact that the solutions used in acute trachoma and pannus were three times as strong as the solutions used in hand disinfection. The solution is dropped once daily on the upper and lower lids, care being taken not to touch the corne. The beneficial action is probably to be attributed to its action, not only as a disinfectant but also to its astringent and caustic properties.

### Regeneration of the Crystalline Lens.

Baas, Professor K., of Freiburg in B. (*Münch. Med. Wochenschr.* November 28, 1899.) Baas reports a very interesting case of a woman sixty-two years of age, in whose eye a new lens formation was observed. The patient had undergone twenty-seven years previously several discission operations for cataract. These operations had given her good sight. At present there is a certain amount of capsular thickening, which becomes thicker upward and outward and from this capsule there sprang out a club-shaped projection into the vitreous space. This projection was slightly narrower at its middle and ended in a distinct enlargement or head which Baas designated as the new lens and which was not unlike a cyst in appearance. It lay behind the iris a little more than the depth of the anterior chamber, and with the ophthalmoscope resembled closely the pictures presented by a lens, which has been luxated into the vitreous. There were opacities in the vitreous body and liquifaction of the latter which condition lead Baas to assume that the cause of the cataract in the first instance was a chronic disease of the choroid. Baas discusses the various works bearing upon the regeneration of the lens in the lower animals, notably those of Cocteau and Leroy d'Etiolle, Milliot and Gonin. He suggests the name of lentoma or crystalline tumor for the growth of his case.

### A New Pupillary Phenomencn.

J. Pilcz, of Zurich. (*Neurolog. Centralb.*, Nov. 6, 1899.) The author has observed in the case of a paralytic, a rather unusual condition of the pupil when the eyes are closed. It is really an associated movement and consists in a contraction of the pupil when the eye is closed. His observations were made upon twenty-two paralytics, twenty-five persons who were affected with catatonie, eight epileptics, seven blind and twenty-three healthy persons. The results were as follows: By energetic closure of the lids contraction of the pupils was noted in forty-three per cent of the blind, forty per cent of the paralytics, twenty-eight per cent of those affected with catatonie, twenty-five per cent of the epileptics, twenty-two tabetics and four per cent of the healthy. When the attempt to close the lids was prevented by holding them apart, a narrowing of the pupil was observed in sixty-three per cent of the paralytics, forty-eight per cent of the demented, forty-three per cent of the blind, thirty-seven per cent of the epileptics, thirty-five per cent of the healthy and twenty-two per cent of the tabetics. These phenomena are observed in those cases where the pupils react either slightly or not at all to light.

### Dionin.

WOLFFBERG, DR., of Breslau. (*Wochenschr. für Ther. und Hygiene des Auges*, October 26, 1899.) Wolffberg mentions the various affections of the eye which are benefited by dionin. It seems that the agent has the effect of exciting in a very marked way an outpouring of, or flooding of the entire conjunctival sac with lymph. This is evidenced by an increased lustre of the surface of the cornea and by a greater transparency of the latter; also by resorption of inflammatory cloudings, and indirectly by a heightened sensibility of the iris to the influence of atropine. The agent is especially adapted to all corneal affections. Wolffberg has used it in connection with pilocarpin, five per cent dionin and two per cent pilocarpin. This combination was used to great advantage in a case of glaucoma. His conclusions are as follows: Its property of producing a flooding of the eye with lymph makes it a most valuable adjuvant in treating all corneal affections, especially those which are not dependent upon disease of the conjunctiva. It is to be recommended for treating all wounds after operations upon the eyeball, and in case of injuries to the eyeball as well as of the conjunctiva; and finally it is a valuable help in the treatment of glaucoma. It may be added in conclusion that the author employs this agent in either 2%, 5% and 10% solution, or in the actual powder. It is closely related to morphin.

### Treatment of Diphtheria of the Eyes.

SCHULTE, DR., of Fulda. (*Woch. für Ther. und Hygiene des Aug.*, October 12, 1899.) Schulte reports two interesting cases of ocular diphtheria where the following treatment was employed: In both cases there was extensive chemosis of the conjunctiva, cloudy cornea, the epithelium of the latter being absent. Serum injections were made and lukewarm applications of Hydrarg. oxycyanat. 1 : 2000 for eight days and improvement was immediately noticed, and in two months vision was 4/5, though the conjunctiva showed numerous scars and there was slight ectropion. It is more than probable that the good result here is to be attributed to the injection of the serum. The second case is equally striking as evincing the efficacy of the serum. Here the entire conjunctiva was swollen and the lids stiff and hard and covered with a membrane, together with involvement of the cornea. Serum was not used till the sixth day, and from this time on improvement was noticed. It must be said that until the serum had been used the condition had been steadily growing worse. Both cases illustrate in a marked degree the great value of the serum therapy.

### Protargol Compared with Nitrate of Silver as Used in the Crede Method.

ENGELMANN, DR. (*Centralblatt fur Gynaekologie*, Nov. 9, 1899.) The author has used 20% solutions of protargol in 100 cases of ophthalmia of the new born, and he concludes that it is a better agent in every sense of the word than nitrate of silver. Kramer observed in 100 cases of the same affection where nitrate of silver was used, inflammatory reaction ninety-six times, and more than once this reaction was attended with profuse secretion, which persisted for several days; and in eighty per cent of the new born, where protargol was employed, there was either absolutely none or only very slight secretion, and in those cases where there was increased secretion in fifty per cent it disappeared after a day, and in only four per cent lasted till the fourth day. Engelmann has never observed inflammatory symptoms attending the use of protargol, while he has had 9 per cent of the cases affected with conjunctivitis after the use of nitrate of silver. Engelmann concludes that 20% solutions of protargol possess practically no irritating properties, and that it is always to be preferred to nitrate of silver.

### Neuritis Following Inflammation of the Sphenoidal Sinus and Diseases of the Posterior Nasal Cavities.

LAPERSONNE, Professor F. de, of Lille. (*Die Ophthalmolog. Klinik*, October 5, 1899.) Lapersonne reports three cases where choked disc was caused by trouble in the sphenoidal sinus and posterior ethmoidal cells. In the latter condition the usual symptoms described by Kaplan, such as neuralgia, photophobia, lachrymation, blepharospasm, and erysipelatous redness at the root of the nose were absolutely lacking. The involvement of the optic nerve is easily explained when we consider the close connection between the sphenoidal sinus on the one hand and the optic canal and the upper portion of the intraorbital part of the optic nerve on the other.

### The Prognosis of Sarcoma of the Uveal Tract.

STOCK, Dr. W., of Tübingen. (*Die Ophthalmolog. Klinik*, November 5, 1899.) Stock has analyzed the cases of uveal sarcoma which have been seen in the Tübingen eye clinic up to the present time. Twenty-eight in all have been observed and of these the prognosis was only regarded as favorable provided they remained free from recurrence for three years after the operation. Cases have been observed of course where the recurrence took place later than three years. Freudenthal is said to have seen a case where the recurrence took place ten years after operation. Eleven of Stock's cases have not yet reached the three year limit and are therefore not counted though several of them have run over two years. Of the seventeen remaining cases eight are to be regarded as cured, that is forty-seven per cent. Of the nine cases which were operated upon in the first stage of the growth (i. e. in the stage which is free from irritative symptoms) seven are still living. Of those who were operated on in the second stage (stage of inflammation with glaucomatous manifestations) and of these there were eleven, six are still alive. Of the eight cases which were operated on in the third stage (i. e. the stage characterized by the appearance of episcleral nodes with later perforations of the ball) five are dead, one case was lost sight of, and the other two died of intercurrent affections. Stock's statistics bring out the point, that the earlier we operate, the better the prognosis, and it makes no difference how good the vision, enucleation is clearly indicated.

### Neuro-Paralytic Keratitis.

CROSZ, E. von. (*Die Ophthalmolog. Klinik*, November 5, 1899.) The author's communication may be summarized as follows: This variety of keratitis may be observed in animals after section of the trigeminus and which occurs in human beings after either injury, compression, inflammatory changes or resection of the nerve or in paralysis comes from the same cause, namely from an infection, which was its starting point in either the conjunctival sac, tear sac, or in direct injury through contact. The development of the inflammation is promoted by the dessication of the cornea as a result of the anaesthesia. The cause of essential neuro-paralytic keratitis in man (which is identical with kerato-malacia) is to be found in the ciliary ganglion, and we generally find in this location a degeneration of the ganglion cells caused either through a cachexia, hemorrhage, or through injuries.

### Massage as Applied to the Eyes.

DARIER, Dr. A., of Paris. (*Die Oph. Klinik*, September 20, 1899.) Darier has given us an interesting record of the development of this method of treatment, which, by the way, goes back into remote antiquity. We are still of course more or less familiar with massage as (employed in corneal opacities) with the yellow salve and we can all record as a rule poor results. Donders in 1872 was probably the first of modern ophthalmologists to call especial attention to massage of the eyes and what he had to say was chiefly on the subject of massage in corneal opacities. This pioneer work was followed soon by communications from Mauthner, Hirschberg, Gradenigo and by many others, all speaking in favor of massage for various pathological conditions of the eye, such for instance, as embolism of the central artery of the retina, the glaucomatous condition, accommodative asthenopia, etc. A few years ago Maklakow suggested a new method of massage, the so called vibration massage, in which an instrument was employed, which made 9000 vibrations a minute. This variety of massage was employed by Maklakow in certain forms of keratitis, choroiditis and even in glaucoma. Pilsbergen, who somewhat later used this form of treatment, reports favorable results in cases of discission where the vibration massage had the effect of hastening the absorption of the lens. More recently Domec has advanced the superior claims of what he calls the pressure massage, which consists in making rhythmical pressure upon the centre of the cornea through the lids with the thumbs. The application should last about five minutes. Domec, who is a pupil of Darier, reports a very startling result following the employment of pressure massage, where the hypermetropia sank from five dioptres to one and a half dioptres and the visual acuity went from 1/26th to 1/6th. Darier's experience seems to be confined chiefly to this method of massage and his conclusions are pretty much in accord with those of his pupil. He reports more than one case of strabismus where the effect of the pressure massage was to raise the vision of the amblyopic eye to that of the good eye. He reports also a number of cases where the symptoms of accommodative asthenopia were completely removed. Darier tried also the vibration massage as recommended by Maklakow and is of the opinion that its mode of action is exactly like that of the pressure massage. He reports a case where the patient was sixty-seven years old and whose corneae were like ground glass from the effects of trachoma. When seen, the vision on the right eye was 1/10th and she could read de Wecker No. 10 in fifteen cm. In the left eye the vision was 1/15th and she could read de Wecker No. 11 in fifteen cm. Fourteen days later after ten sittings the vision in the right eye mounted to 1/4th for the distance and she could read de Wecker No. 6 at 15 cm. while the vision in the left eye was 1/10th with the ability to read de Wecker, No. 8., at 15 cm. and at the present time she can read comfortably de Wecker No. 4 (which is the usual print) with the aid of convex lens 2,50. Darier uses the method successfully in iritis, choroiditis, keratitis and in the prodromal stage of glaucoma and that too with success. He concludes in the words of Domec. The effect of the method upon hypermetropia and hypermetropic astigmatism is to elevate the visual acuity. Accommodative asthenopia usually disappears completely under pressure massage and only in the case of high grades of ametropia and in old persons are glasses to be resorted to. Pressure massage gives the most startling results in amblyopia. Eyes with vision from 1/10th to 1/25th can be made to reach normal vision. The method strengthens the accomodative power. The improvement in the visual acuity rests probably upon the improved nutrition while the increased accommodative power is to be attributed perhaps to an extension or stretching of the fibres of the zonula and also to a strengthening of the ciliary muscle. The massage movements must be conducted softly at first, especially in the case of asthenopia and it should be administered say once every other day for three weeks and then there should be a break of a month when another series of applications of three weeks should be commenced.

### Recurrent Hemorrhages into the Vitreous for Sixteen Years.

JACQUEAU, DR., of Lyon. (*Die Ophthal. Klinik.*, Dec. 5, 1899.) The case reported by Jacqueau was that of a strong man, twenty-eight years old, who had been subject for years to hemorrhages into the vitreous body of his left eye. During these attacks which came at least once a year, his vision sunk to practically nil. He would then energetically use hot foot baths, and in a few days his vision would return to the normal. The patient was put on cinchona bark and since then he has had no attacks. What is chiefly remarkable about the case is the benign character of the hemorrhages, the rapid absorption of the latter and the complete restoration of vision. The hot foot baths seemed undoubtedly to shorten the attacks. The author draws some interesting conclusions from an analysis of a number of these cases which had been seen in the Hotel Dieu. He finds that hemorrhages of this character are most often found between the twentieth and thirtieth years. Between the thirtieth and fiftieth years there is an interval in which the affection is seldom seen, and after the fiftieth year it becomes again relatively frequent. Those who are affected in early life are usually males, while after the fiftieth year one meets the condition equally often in both sexes. In young people the trouble is apt to be on both sides, while with increasing age we will be apt to notice a disposition to a monocular manifestation of the trouble. There is no satisfactory explanation for the appearance of these hemorrhages among young people.

### Adrenal Extract in Diseases of the Eye

LANDOLT, H., (*Centralblt. f. Augenh.*, Nov., 1899.) After reviewing the literature on the subject and discussing the several methods employed for the preparation of the extract, the author gives his experience with the drug in experiments on animals and in the treatment of patients. His best results were obtained from a preparation which

Otto V. Furth, working in Hofmeister's laboratory, has succeeded in obtaining in very pure form and at the same time aseptic and capable of exact estimate of the dosage of its active principle. By experiments on rabbits he satisfied himself before applying it to the human eye that there were no injurious effects to be feared.

Dropped into the conjunctival sac this preparation brings on almost immediately a strong anemic condition, which, depending somewhat upon previous degree of congestion, lasts from one to two hours. With other preparations he was only able to secure an anemia from fifteen to twenty minutes duration. There is at first a slight burning sensation, to which few patients object, however, because it is so quickly followed by a feeling of coolness, and by relief from the previous pain and photophobia due to the inflammation present. The action of the extract is confined to the superficial vessels and can therefore be used for diagnosticating between superficial and deep inflammatory processes. By sub-conjunctival injections, the vessels of the deeper structures in rabbits have been affected, but this has not yet been tried in man.

In addition to its value in rendering the site of an operation bloodless, it possesses another very valuable use in the assistance it renders to the absorption by the eye of cocain, atropin. eserin, &c. Inflammatory processes in the eye often seem to retard the action of these drugs very markedly, so that large doses are required to produce the desired effect, but by using adrenal extract in conjunction with any of these drugs their action is greatly hastened and the usual dose found to be sufficient.

As far as the course of the disease goes, or its duration, the extract seems to have no influence in acute or chronic conjunctivitis, phlyctenular conjunctivitis, iritis, glaucoma, or keratitis, though the subjective symptoms were relieved in many cases, especially in acute conjunctivitis.

### Two Cases of Leprous Chorio-retinitis.

BISTIS, J. (*Centralbl. f. Augenheilk.*, Nov. 1899.) The first case was a Greek woman, aged 46 years, from a leprous colony near Constantinople. She was married and had one child that died at ten months from an unknown cause, two children living and well. There was complete anesthesia of the extremities and the usual picture of anesthetic leprosy. Examination of the eyes showed the following condition: R.E. hypermetropia of high grade, cornea anesthetic but perfectly clear. In the fundus there was, near the upper periphery an oval, yellowish spot, containing two black specks, and a little outside the macula a rounded, black, pigmented area, which appeared to rest upon a less pigmented surface. In other words, a circumscribed chorio-retinitis. Vision normal. L.E. hypermetropia of mild grade, complete anesthesia of the cornea, which was infiltrated in its lower third. The iris exhibited signs of iritis, with many posterior synechiae, and the fundus was invisible on account of the corneal opacities.

The second case occurred in a Hebrew, aged 30, who had suffered from anesthetic leprosy for more than seven years. R. E. mild ptosis; cornea more or less insensible; pupil slowly reactive. Ophthalmoscopic examination showed a posterior staphyloma and external to and somewhat above the region of the macula a light yellow spot, with pigment in its center. A similar spot is seen above and to the outer side of the disc and the whole temporal side is covered with pigmented and atrophic areas. The condition in the left eye was almost exactly the same as that in the right and vision in each equaled 6/24.

The author refers to the examinations of leprous patients made by Bull and Hansen and thinks it is difficult to understand why leprosy, which is a disease so like syphilis in many respects, does not like the latter more frequently attack the retina and chorioid.

### The Presence of Pneumococci on the Normal Conjunctiva.

OERTZEN (*Klinische Monatsbl. f. Augenheilk.*, Nov. 1899) gives a critical review of the subject, but pays special attention to the experiments and results of Gasparrini, which were quite contradictory to his own work. Gasparrini found the pneumococcus in virulent form in 80% of his researches on the normal eye, his subjects being medical students, nurses and patients with cataract, glaucoma, etc. Oertzen believes that the above findings must have been due to faulty technique, for he was only able to demonstrate the pneumococcus himself in 4% of the cases examined, while many other investigators have failed entirely to find the organism in normal eyes. He concludes that the more nearly correct view is that the pneumococcus may be present in a relatively small number of cases in the normal eye, though he states that the number of his own experiments is too small to permit of decided statements in regard to their actual frequency.

### The Connection Between Eye and Nasal Affections.

HEILMAIER, OSKAR, DR., of Würzburg. (*Zeitschr. für Augenheilk.*, December, 1899.) Heilmaier goes over the histories of 1,300 cases. It is quite remarkable that in these cases only sixty-four were found where the nasal mucus membrane was normal. His views may be said to reflect pretty much those of von Michel on this subject, especially with reference to the etiology of dacryocystitis. He concludes as follows: In diseases of the tear channels there is found, as a rule, some disease of the nose, usually rhinitis atrophica fœtida. The eczematous affections of the eye are almost always associated with eczema of the nasal mucus membrane. Catarrhal conjunctivitis with its complications is frequently caused by disease of the nasal mucus membrane. Serpent ulcer appears to be attended essentially by those nasal affections which most frequently appear with blenorrhœa of the lachrymal sac.

### Serum Therapy of Diphtheritic Conjunctivitis.

WAGNER, H. (*Inaug. Dis. Giessen*, 1898.) Relative to this subject, reference might be made to a contribution which gives the results of treatment of this class of cases for the past few years in the clinic of Professor Vossius, of Giessen. The author (Wagner) goes thoroughly into the history of this method of treatment, and compares the results obtained with it with those seen in old times. He analyzes fifteen cases which were observed in the Giessen eye clinic. An inspection of the tables which the author presents shows that all the cases were cured in which the Loeffler diphtheria bacillus was demonstrable. One exception to this is found in a case where, in addition to the presence of diphtheria bacilli, gonoccoci were discovered. This case died in a few days of miliary tuberculosis. Wagner has arranged his cases in a table alongside of fifteen cases which were treated in the ante-serum days, and the striking advance which has been made in the treatment of this variety of conjunctivitis is clearly seen.

### Tuberculosis of the Conjunctiva.

REMMLINGER, HEINRICH, of Cologne. (*Inaug. Dis. Giessen*, 1898. The author gives a careful history of this disease compiled mostly from the works of others. Judging from the various statistics on this subject conjunctival tuberculosis is a rare disease. Spangenberg found one case in from 1,700 to 2,000 cases of eye diseases. Horner found the affection once in 4,000 cases. The author has found thirteen cases of conjunctival tuberculosis in 25,000 eye cases which were treated in the eye clinic of Giessen between 1890 and 1898. It must be said that six of these cases were regarded as lupus of the conjunctiva. The clinical features of the condition resembled closely what we see in tuberculosis of the mucus membrane elsewhere —that is to say, there were ulcers of various sizes with slightly elevated borders and with a grayish floor. Surrounding these ulcers there were miliary nodules which gradually broke down. The site of these changes was usually in the conjunctiva of the lids and in the transition folds. In nearly all of the cases swollen and caseous glands were found in front of the ear and in the neck. The author makes the statement that tuberculosis of the conjunctiva is found almost exclusively in the young—that is to say, before the twentieth year. In the cases of pure tuberculosis of the conjunctiva the treatment consisted in caustic applications to the diseased surface and frequently in excision of the tuberculosis area, and as a result the affection was completely relieved.

### Treating the Eyes Without a Bandage After Operations.

MOHILLA, K., DR. From Dr. Purtscher's Eye Clinic in Klagenfurt. (*Centralb. für Augenheilk.*, December, 1899.) It will be remembered that a few years ago Hjort reported a number of cases of eye operations in which he had abandoned the bandage in the after-treatment. His reasons for so doing this were that the bandage was an obstacle to the so called physiological toilet of the eye, or, in other words, that the lid movement was abolished, there was a damming up of tears in the conjunctival sac, thus rendering the latter location a favorable soil for the multiplication of bacteria; and finally that the bandage favored mental depression, even causing at times delirium. Without the bandage it was much easier to keep the eye clean. This innovation in the treatment of eye operations was subjected to trial at the hands of Schjötz, Praun, Walter and others. The method of Mohilla, which is somewhat modified from that of Hjort, is as follows: The patient is first bathed and his head covered with a rubber cap. The face and eyelids were then washed with soap and water and then with absolute alcohol, and finally with a sublimate solution 1: 3000. The conjunctival sac was usually irrigated with a four per cent. solution of boracic acid. The instruments were boiled and before operation were dipped into a sublimate solution 1: 1000. For the first few hours after the operation the lids were covered with a soft pad of sterilized gauze which had been soaked in a 1: 3000 sublimate solution. This application generally absorbed the debris (tears and blood) of the operation. A green shade was then applied, the light was softened or subdued and the patient kept in bed for twenty-four hours. In favorable weather the patient went out on either the fifth or sixth day. Under this règime there were performed 118 extractions and 76 iridectomies. In eighty-five of the extraction cases the healing process was perfect. In the remaining thirty-three there was more or less retardation of the healing from these causes, namely, springing of the wound in eleven cases, mild iritis in seventeen cases, cyclitis in two cases and infection of the wound in three cases. Notwithstanding these complications the results were good and only one eye was entirely lost. The average time for recovery was twenty-four and one-half days, and the average vision with glasses was 3/15ths. The best vision was 3/5ths (in four cases) and the worst vision was 3/50ths (in two cases). It will be seen then that in some respects the method falls somewhat short of the results seen when the occlusive bandage is used, though to one who has always been in the habit of employing the latter these results will seem surprisingly good. More astigmatism was found than is usual after operations where the bandage is employed. In no case was there any mental depression which we not infrequently see when the bandage is used, nor was there any evidence of excitement. It is evident that the method has left a favorable impression upon Purtscher and his school and that further trial will be made.

### Tuberculosis of the Nasal Duct.

SEIFERT, O., PROF., of Würzburg. (*Münch. Med. Wochenschr.*, December 23, 1899.) Seifert's investigations were undertaken with a view of ascertaining the connection between tuberculosis of the nares and of the nasal duct, whether the trouble in the latter is always preceded by the nasal affection. This is the view held by von Michel. Seifert, in his analysis, makes no sharp distinction between lupus and tuberculosis. He analyzes fourteen cases which were all that had been seen among a total of 4200 eye cases in his clinic. Some interesting facts are brought out—first, that tuberculosis of the nasal duct is a very rare affection, and second, that women are more frequently affected than men. The disease does not frequently attack the young as has been generally supposed. In all cases recorded there was tuberculosis of the nasal passages. There are three possible ways in which infection can take place: 1st. From the bony walls of the tear duct. 2d. Extension of the disease from the nose. 3rd. Extension from the conjunctiva. Of these the most frequent is where the disease extends from the nose, a view which confirms the opinions of von Michel. Seifert has practically nothing to suggest as to treatment.

### Light in the Treatment of Eye Diseases.

DAXENBERGER, F., DR., of Regensburg. (*Wochenschr. für Ther. und Hygiene des Auges*, December 21, 1899.) Daxenberger describes minutely an electric light cabinet which he employs in ophthalmic practice. It is sufficient to say that the patient is put into this cabinet and subjected to the influence of the light pretty much in the same way as though the sweat cabinet were being used. He claims to have used the method with benefit in all affections where iodide of potash is apt to do good—that is to say, in chronic inflammations of the choroid, retina, sclera and iris. Even in cataract the "light bath" is supposed to hasten the absorption of the lens masses. The method is especially adapted to cases where there is no photophobia. He reports a case of old seclusio pupillae following rheumatic iritis, where, after four electric light baths, together with the use of atropine, the adhesions were broken up; and where, after seven more baths, the exudates were almost entirely absorbed. The author describes the apparatus and the length of time the patients should remain in it, the proper temperature and the necessary precautions to observe throughout the treatment. The chief action of the electric light bath is in the perspiration which it induces through the heat. Some think that the rays of the electric light exert a specific influence upon the metabolic processes of the body, increasing oxydation, the formation of new blood corpuscles, and that it has also a germicidal action.

### The Specific Gravity of the Aqueous Humor.

GOLOWIN, S. S., DR., of Moscow. *(Archiv. für Ophthalmologie, Bd. XLIX Ab. I.)* Golowin has recently made a number of experiments to determine the specific gravity of the aqueous humor. His experiments were made with a great deal of care and ingenuity. It is not necessary to go over them in detail, but these are his conclusions, or rather his results: He found that the normal specific gravity of the aqueous of the animals used in his experiments was about the same; that is, I, 008. The aqueous humor which was reformed after emptying the anterior chamber was found to have a much higher gravity than the normal, but in twenty-four hours the specific gravity of the reformed aqueous had returned to the normal. It will be remembered that other investigators have called attention to the fact that the fluid which reformed in the anterior chamber after a paracentesis was not identical in all respects with the normal aqueous, but resembled more in its properties a serous transudation. It was found by Golowin that the osmosis of a five-per-cent salt solution from the conjunctival sac produced practically no change in the specific gravity of the aqueous humor, but when the corneal epithelium was removed it was noted after osmosis of such a solution that the specific gravity of the aqueous had gone up. When a five-per-cent salt solution was injected beneath the conjunctiva there was no appreciable change in the specific gravity of the aqueous. Immediately after the death of the animal the specific gravity went down. The author tested the specific gravity of the aqueous humor in three cases of glaucoma and he found that there was no deviation from the normal, so long as there are no changes in the anterior chamber, while in acute glaucoma the specific gravity of the aqueous was markedly higher.

### The Regeneration of the Ciliary Nerves After Optico-Ciliary Neurectomy

BIETTI, A., DR., of Parma. *(Archiv. für Ophthalmologie, Bd. XLIX, Ab. I.)* Bietti's conclusions are based chiefly upon the anatomical examination of a case where optico-ciliary neurectomy had been performed, and where a few years later the eye had again become sensitive. A very minute anatomical examination was made in Bietti's case and the author goes over the experimental side of the question. He concludes that after such an operation a new formation can spring out from the nerve trunk, and in spite of defective coaptation can penetrate the sclera and lead to an outbreak of irritative symptoms, especially in the ciliary body. This contradicts the results obtained in animals. A vicarious innervation of the inside of the eye from the anterior ciliary nerves could not be proven, though these nerves were found at several points in all their normal strength. Such a possibility is entirely reasonable.

# ABSTRACTS OF GERMAN SOCIETY REPORTS AND INAUGURAL DISSERTATIONS.

BY CHARLES ZIMMERMANN, M. D.,

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## THIRTY-SECOND REPORT OF THE UPPER HESSIAN SOCIETY OF NATURAL SCIENCE AND MEDICINE, GIESSEN.

VOSSIUS, (Nov. 24, 1896.) CASE I: *Two magnet operations.* The left eye of a laborer, 37 years old, was struck by apiece of iron while sharpening a mill-stone. Scleral wound near upper corneal margin 3 mm. long healed in a few days. Three and a half months later, iris grass-green, pupil dilated ad maximum, no reaction, no synechia; immediately behind lens a few stripes of blood and gray floating opacities of vitreous; at the bottom and outward a whitish accumulation of tissue with dark spots, no foreign body visible. V. = 6/24; visual field concentrically contracted; hemeralopia led Vossius to the diagnosis of foreign body in vitreous, which was verified by extraction of a piece of iron from 2 to 3 mm. square with Hirschberg's electro-magnet through scleral section in lower temporal quadrant; three conjunctival sutures, normal healing. Of especial interest was the *hemeralopia* which Vossius considers as an important symptom for the diagnosis of pieces of iron in the interior, and attributes it, as well as E. von Hippel, to degeneration of the retina.

CASE II: Boy, 15 years old, linear perforation of upper temporal portion of cornea extending a little over limbus, prolapse of iris, a square shaped piece of iron in lower part. In narcosis the magnet was introduced seven times, but in vain, on account of a fold of the iris presenting in the wound. The anterior chamber filled with blood, which excluded further attempts; closure of wound by suture, traumatic cataract; eye irritated. Two weeks later magnet extraction through section in lower limbus with lance-shaped knife; the foreign body, 4 mm. square was dislodged from behind the capsule with a spatula; normal healing

Dec. 8, 1896: Man, aged 29, has, for five years, *enophthalmos* of the right eye *with periodic exophthalmos* when he stoops. The latter was explained by stagnation of the blood current in the orbital veins.

Feb. 9, 1897: HÜBNER. *On the Histology of Pinguecula.* Pinguecula consists chiefly of elastic fibres, as Hübner proved by staining with Orcein (Taenzer-Unna), and their products of degeneration, which resemble hyaline, and seem to be related to amyloid; but they do not give Ernst's reaction, like hyaline derived from connective tissue fibres, but retain this characteristic staining by orcein. From 40 preparations H. could not see a connection of pinguecula and pterygium as asserted by Fuchs.

May 11, 1897: BEST, *Sarcoma of the Choroid.* At the enucleation of the eye an intra-ocular pigmented sarcoma was found, which extended into the brain along the optic nerve. Death three months later, with symptoms of brain tumor. Post-mortem examination showed that the sarcoma involved the right optic nerve, chiasma, and attained the size of a pigeon's egg at the base of the brain; no metastases. This is unusual, as most patients die from metastases in the liver. The large epithelial cells contained glycogen, originated from the endothelium of the lymph canaliculi, and developed along the adventitia of the blood vessels.

VOSSIUS demonstrated a rather large *tumor of the ocular conjunctiva of* (*ophthalmia nodosa*) which contained round and epitheloid cells, a few giant cells and three hairs of a caterpillar.

June 29, 1897: VOSSIUS reports his *experiences with holocain and euphthalmin.* In two cataract operations holocain was not as satisfactory as cocain. He recommends euphthalmin (2 per cent solution) for ophthalmoscopic examination. Mydriasis (medium) after 20 to 30 minutes, disappears after 2 to 3 hours. (A 10 per cent solution is preferable. Reviewer.)

July 13, 1897: VOSSIUS reports *28 operations for myopia.* He considers as the best method discission of the anterior capsule and corticalis with subsequent evacuation of the opaque lens matter. The absorption is accelerated by atropin instillations and hot applications. Discission of the whole lens according to Thien is not advisable, as it favors prolapse of vitreous and detachment of the retina. Diseases of the macula give no contraindication. He operates from 12 D. upward; from 10 D. only in children, which show a recent progression of myopia. After the operation the refraction was E. or H., up to 6 D. The loss of accommodation is irrelevant. V. saw a macular hemorrhage after two years in a case with macular disease, never detachment of the retina. The latter may be caused by the operation if the whole lens is cut, and if too much pressure is applied in evacuating the lens matter. The safest method is to limit the operation to several discissions, as in zonular cataract, which, of course, requires a much longer treatment. The details are published in Deutschmann's *Beiträge zur Augenheilkunde*.

Jan. 18, 1898: VOSSIUS reports *four cases of diseases of the orbit and its accessory cavities which affected the eye ball.* Echinococcus of the orbit between periosteum and roof, osteoma of the sphenoid sinus, a polypus of the nasopharynx springing from the sphenoid sinus, both with early optic atrophy, a mucocele of the ethmoidal born. Demonstration.

May 10, 1898: VOSSIUS, *On Hereditary Affections of the Optic Nerve*. V. observed hereditary optic neuritis (at first described by von Graefe and Leber) in the male members of the same family through three generations. A central scotoma with intact peripheral visual field, occurred in five persons in the 19th, 21st and 23rd years. The pathogenesis, which is generally unknown, apparently was due to abnormal formation of the skull. According to the post mortem conditions found by Ponfick and Manz, this would explain a damage of the optic nerve in the optic canal by abnormal growth of the bone.

June 7, 1898. VOSSIUS, *A Case of Vaccine-blepharitis in form of diphtheric ulcers* on the outer half of the margin of the upper and lower lids, and five purulent vesicles on the inner half. Cornea intact, lashes came out and are reported to have not grown again.

VOSSIUS, *A case of croupous conjunctivitis* in a child, aged 8 months, which closely resembled diphtheritic conjunctivitis. A thick gray pseudomembrane covered the palpebral conjunctiva and retrotarsal folds, which could be removed. Cornea intact; etiology unknown. Anti-toxin injection stopped the formation of membranes, but after two days an abscess formed in the region of the tear sac. Incision. The pus and membranes contained only streptococci, the virulence of which were not weakened by the antitoxin-serum. Conjunctivitis caused by streptococci, giving the aspect of croupous or diphtheritic conjunctivitis, are very rare. V. made the same observation in a boy 12 years old.

K. JOERSS, *On the Normal and Pathological Histology of the Lachrymal passages.* Mucous glands are found only at the opening of the tear duct into the nose. J. found in 4 preparations out of 50, serous glands in the uppermost part of the lachrymal sac, of the same type as Krause's conjunctival glands. In blennorrhea the wall of the lachrymal sac is infiltrated and shows "most" cells, haematogenous pigment and colloid or hyaline globules, the so-called Russel's corpuscles, which also occur in the secretion. Granulation tissue obstructs the passages. J. found in all cases of dacryo-cysto-blennorrhea, follicles similar to trachoma. Therefore he cannot accept the opinion of Kuhnt, who described these follicles as primary trachoma of the nose. Later on a fibrous degeneration of the wall takes place, which loses its elasticity and gives way to ectasia, and the cylindrical epithelium degenerates into pavement epihelium.

June 21, 1898: VOSSIUS, *Extirpation of an orbital sarcoma with preservation of the globe.* Ptosis, eyeball displaced downwards. No diplopia. V. = 0.1. Optic disk hazy and oval, veins dilated and dark. An undefined resistance between eyeball and upper orbital margin. Transverse incision of 2cm. length below superciliary arcus. Tumor encapsulated closely to the orbital roof, not adherent to the bone except at a small place in the depth of the orbit, where it was severed with scissors. Perfect healing, slight ptosis, no diplopia. V. = 0.3. Optic disc less hazy. The tumor was 4.5 cm. long, 2.3 cm. wide and 1.5 cm. thick. At the place of separation it showed muscular fibres from which V. inferred that it probably sprang from the sheath of the levator palpebra. C. Z.

### On the Results of Operations for Chronic Glaucoma

FRIEDRICH, H. *(Inaug. Diss.*, Giessen, 1898.) Friedrich discusses the comparative value of iridectomy and sclerotomy in chronic glaucoma from the more recent literature and the material of the University Eye-Clinic of Giessen. From 1879 up to April, 1898, out of 12,919 clinical patients, 150 glaucomatous eyes were observed in 97 cases, *i. e.*, 0.75 per cent. The details of 66 eyes of 47 cases with chronic glaucoma are arranged in tabular form, from which F. reached the following conclusions: The prognosis of chronic glaucoma has to be very carefully guarded. Iridectomy gives the best primary and relatively lasting results, if performed as early as possible. In concordance with the opinions of most ophthalmologists at the present time, the indications of sclerotomy are very limited. Sclerotomy ought not entirely to be discarded, but may be performed as a substitute to iridectomy, if the latter has yielded no sufficient result.

C. Z.

### On the Examination for Anisocoria Without Reflex Immobility.

SCHAEFER, GERHARD. *(Inaug. Diss.*, Giessen, 1899.) The discrepant opinions of psychiaters and ophthalmologists whether the difference in the width of both pupils is pathological (Moebius, Heddaens) or not (Nasse, Reche), may be due to different methods of examination. In investigating which is the best method, S. mentions the difficulties of an exact measurement of the pupils, which arise from the never resting mobility and variability of the latter upon the influence of light, accommodation, convergence, irritation of the skin, intestines, muscles, tendons, respiration and psyche, all of which would have to be excluded. The pupilometers of Haddaeus, Follin, Bjerrum, Haab, Schadow, Fick, Houdin and Badal, Bellarminoff, Mulder and Krenchel, Wecker and Landolt, Obernier and others, cannot be utilized for ascertaining anisocoria, from reasons which lie in the apparatus and methods themselves and in the factors above mentioned. The best method is the observation with the naked eye, which, according to Haddaeus, distinctly recognizes even a difference of 0.2mm. Daylight, a gas lamp, or the pupillary antern, designed by S., for that purpose, were used for illumination. The latter has three graduations: I. 2.78 normal candle power for energetic contraction of the pupils. II. 0.83 normal candle power for medium width. III. 0.083 normal candle power leaves still sufficient light for the observation of the pupils. Photography of the pupils and of a millimeter rule placed in the same vertical plane, would be the most exact method, which, however, from technical and clinical reasons, can only be employed under favorable circumstances. For the state of maximal contraction a projection apparatus with electric carbon light, for material dilatation flashlight are used. The time for explosion of the latter is 0.04", that for contraction of the pupils upon the influence of light is 0.3" (Vintschgau), according to Arlt 0.55". Two such photographic plates are given, which allow an exact comparative measurement of the pupils.

C. Z.

**On Keratitis Dendritica and its Relations to Herpes Corneae.**

BAAS, ALBERT, *(Inaug. Diss.*, Giessen, 1899.) In 1885 Emmert described a new form of ulcerous keratitis under the name of "Keratitis Dendritica Exulcerans Mycotica," which he had observed in 6 cases affected with phthisis and scrofulosis at the age of 20 to 45 years. Hock, Hansen-Grut, Gillet de Grandmont and Kipp published similar observations, some of which they had made in healthy persons, but mostly in connection with malaria. The occurrence of dendritic keratitis after influenza led most authors to believe that it was no disease of itself, but identical with herpes febrilis corneae as described by Horner in 1871, and later on by Josephine Kendall, Wangler and Hagenauer. The same view is held by Vossius, and, for further proof, B. gives in detail the clinical histories of 35 cases of the eye clinic of Giessen. A dendritic opacity started from a herpetic ulcer and, after sloughing of the epithelium, dendritic furrows developed. Their terminations or their bends and the places from which twigs branched off were marked by saturated infiltrations. In 3 cases herpetic vesicles were present, and 5 showed simultaneous facial herpes. Some were associated with anesthesia of the cornea; hypopyon, deposits on the posterior surface of the cornea and posterior synechiae occurred as rare complications. Very rarely an obstinate central parenchymatous opacity followed. The dendritic opacities remained for months and left slight maculae. Out of 1738 cases of keratitis, treated from April 1, 1890, on, only 35 = 2.01 per cent., were herpes or dendritic keratitis. 12 = 34.3 per cent., occurred in the female; 23 = 65.7 per cent. in the male. This corresponds to the statistics of Zuerich, as to the greatest frequency in and after middle age, and in winter and spring. Febrile diseases of the respiratory tract and influenza were the chief causes of herpetic and dendritic keratitis. C. Z.

### On Injuries to the Eye by Glowing Metals—Particularly Glowing Iron and Slag.

WEIFENBACH, FRITZ. (*Inaug. Diss.*, Giessen, 1899.) In the Eye-Clinic at Giessen, from April 1, 1890, to April 1st, 1899, 7,494 persons were treated; and in the Policlinic, 29,004, of which 106=0.37 per cent., were injuries produced by glowing metals, viz: 65 by glowing iron, 7 by fluid lead or zinc, 34 by glowing slag. The latter were much more severe than the former, because the glowing slag sticks to the place of impact, retains the heat longer, and thus causes a more deeply penetrating combustion and necrosis. The final results of the 65 burns by glowing iron were total amaurosis of 6 eyes, in 3 perception of light, in 2, V.=1/10, in all patients V. was regained almost entirely. Almost all patients could pursue their former occupations. In 5 cases both eyes were injured, but only one was disabled from work. Symblepharon, Entropion, Trichiasis, Ankylobleparon followed in 24 eyes, *i. e.*, in 34.3 per cent.

Of the 42 eyes injured by glowing slag, 7 were totally blinded, 2 had only perception of light, and 3 great impairment of V.; only in one case V. of both eyes was much injured. In 19 eyes, i. e., 45.4 per cent. Pterygium-like cicatrices, Symblepharon, Entropion and Trichiasis, Ankyloblepharon occurred. Quite a number of these patients had to give up their former work and rely on their accident insurance.

The treatment consisted in removal of the foreign bodies, applications of atropin sublimate, cocain—vaseline and permanent warm-pressure bandages moistened with a 2 or 3 per cent. solution of boric acid, and warm, moist, borated applications.

If the cornea is not injured, a purulent keratitis may develop when the conjunctiva and sclera are burned as far as the limbus. Superficial combustion of the corneal epithelium (by hot iron, cigars,) can heal without the least impairment of sight. Very severe burns of the sclera may lead to purulent affections of the uveal tract and vitreous, and terminate in panophthalmitis. C. Z.

### Injuries of the Eye Caused by Lime.

MAY, EMIL. (*Inaug. Diss.*, Gissen, 1899.) During the years 1890 to 1898, in the eye clinic of Giessen, out of 25,045 patients, there were 109 cases of injuries by lime (0.43 per cent.). The lids were affected in 1.8 per cent., the conjunctiva or both in 17 per cent., the cornea and conjunctiva in the remaining cases. The results of treatment were generally good. Impairment of V. in all cases was due to opacities of the cornea. The clinical histories of 30 cases are given in detail. The injuries were produced by slaked or unslaked lime, cement, mortar and plaster of Paris. (The latter is not injurious to the eye, except as plastering material in combination with oxide of calcamine. Reviewer.) Of these unslaked lime was the most deleterious, owing to its chemical property of absorbing water from the tissues, development of heat and coagulating of albumen. Treatment consisted in removing particles of lime by forceps, Daviel's spoon or cotton sponges impregnated with vaseline. The conjunctival sac was washed out with oil; cold applications, cocain or atropin salve. In affections of the cornea moist pressure bandage and moist warm applications were applied. Agglutinations of lids to eyeball were daily severed with probe or spatula, but most cases were obstinate and symblepharon could not always be prevented. C. Z.

### Affections of the Uveal Tract Due to Contusions of the Eyeball.

EISENHUT, EMIL. (*Inaug. Diss.*, Giessen, 1899.) In injuries of the eye by sharp objects the cornea and sclera are chiefly involved, in contusions the uveal tract, owing to the abundance of bloodvessels in the latter which may resist intense pressure, but will easily rupture when stretched or lacerated. Out of 7000 eye patients that were treated in the eye clinic, at Giessen from 1890 to 1898 inclusive, 79 cases (1 per cent.) showed lasting changes of the uveal tract from injuries and are discussed in detail by the author.

Rupture of the iris between ciliary and pupillary margin, which is of very rare occurrence, one case: The iris showed a large triangular defect with the apex toward the ciliary attachment, caused by a blow with a bat, capsule intact; traumatic cataract; extraction.

Isolated tears of the pigment layer of the iris: 5 cases from literature, 2 cases observed in the clinic. The tears appear as dark stripes by direct illumination but with the ophthalmoscope as red shining lines. The tears are due to lack of elasticity and are brought about by over tension of the posterior surface.

These two cases also showed lacerations of the sphincter iridis, which was observed in 23 other cases. All were associated with moderate mydriasis, never maximal. Pupillary action was at first abolished. The pupil was oval where the ruptures were large or numerous. Cicatrization does not take place on account of the constant motion of the pupil. Ruptures alone do not deteriorate vision when unaccompanied by affections of the interior, which did not occur in one-fourth of the patients. The complications were: 8 cases, ruptures of the choroid; 7 cases, dislocation of the lens; in 6, hemorrhages into the vitreous; in 3, retinal hemorrhages; in 3, cataract; in 1, iridodialysis. The manner in which the injury is produced is not always the same. E. follows the theories of Francke, Schirmer and Foerster.

Ruptures at right angle to the radius of the iris, iridodialysis, by separation of the iris from the ciliary body and cornea: 16 cases in which the cornea or limbus was struck. In all cases the iridodialysis was of minor importance and V. was affected by complications. The chief feature is the profuse hemorrhage into the anterior chamber owing to laceration of the canal of Schlemm and the larger arterial circle of the iris. In 8 cases a section of the iris was torn out which looked as if regular iridectomy had been performed.

Total iridodialysis or traumatic aniridia: 3 cases. If the iris, after being torn from the ciliary margin, is not cast out through a scleral rupture it must lie in the anterior chamber. The iris, however, could not be found in these 3 cases.

Total retroflexion of the iris: one case. All that was visible of the iris was a small circular seam 1 mm. wide. Red reflex, no details; extraction of cataract, after two years secondary glaucoma with complete amaurosis.

Rupture of the choroid: 39 cases. 6 of these were atypical or direct, i. e., they started from, or were situated at the point where the force struck the eyeball. The indirect ruptures involved almost exclusively the posterior portions of the choroid and were nasal in 3 cases, temporal in 26, both directions in one, above or below disk in 3. In 5 cases the ruptures were not concentric and occurred in the region of the macula, twice horizontal, twice vertical. The retina is not ruptured in these cases because it is fastened only behind to the optic nerve, the choroid is also fastened in front. V. and V. F. depend on the location of the rupture. Only one rupture was found in 22 cases; in 8, 2 ruptures; in 3, 3; in 4, 4; in 2, indefinite. The patients were mostly miners, stone cutters and lumbermen. C. Z.

### Contribution to the Statistics of Injuries of the Eye, Particularly Those Produced by Foreign Bodies.

Volk, Joseph. (*Inaug. Diss.*, Giessen, 1899.) From Jan. 1, 1890, to April 1, 1898, out of 6705 patients in the eye clinic at Giessen and 25,134 in the Policlinic, there were 957 clinical cases of injuries (perforations, contusions, combustions, escharotics and serpent ulcers subsequent to injuries). The causes of the injuries are given in tabular form, of which the most prominent were: 161 by pieces of stone, 129 iron and 121 wood. 92, i. e., 9.61 per cent. of the 957 injuries, were produced by foreign bodies, i. e. 1.37 per cent. of all clinical eye patients, and among these chips of iron and steel were the most frequent, viz., 53. 11 of the foreign bodies were lodged in the iris and 66 in the vitreous. Among these 39 pieces of "iron" were included 11 gun caps. 24 remained in the vitreous. In 26 cases enucleation, in 7 exenteration had to be performed. 7 turned into phthisis bulbi. When the eyeball was preserved, V. was $=$ 0 in 18 cases, $<$ 1-10 in 12, $<$ 1-4 in 6, between 1-4 and 1-2 in 13, $<$ 1-2 to 1 in 6, unknown in 2. The injuries by foreign bodies were complicated by prolapse of iris and vitreous, traumatic cataract and detachment of retina, once by optic atrophy. Pieces of iron produced siderosis of the globe, which is characterized by pigmentation of the cornea, greenish or reddish brown discoloration of a blue iris, yellowish deposits on the posterior surface of anterior capsule, pigmentation of the retina and hemeralopia.

The clinical histories of 93 cases, given in detail, are very interesting and instructive. In accordance with the investigations of Leber and Kostenitsch, pieces of copper in the vitreous (10 cases are described) are very dangerous on account of the almost typical abscess of the vitreous and detachment of the retina, with more or less inflammatory symptoms. Even if suppuration does not set in from infection soon after the accident it is likely to come on later on account of the chemical action of the copper, which is dissolved and pervades all portions of the interior of the eye, as shown by Kostenitsch, R. Schmidt and Wagenmann. Small pieces of copper may thus be entirely dissolved and disappear. Volk could prove the chemical disintegration of the copper in some of his cases by the formation of verdigris on the foreign body. In 9 cases, enucleation; in 1 phthisis after spontaneous elimination of the foreign body; in 1, the foreign body remained in the eye but the author did not think it possible that it could be copper. Some particles of copper which remained in the cornea without any reaction turned black. The ruin of the eye occurs more rapidly if the copper be imbedded in vascular tissues.

The lesions caused by pieces of stone are the most deleterious on account of the unclean, infectious material. Almost without exception when lodged in the vitreous, they led to panophthalmitis and required enucleation or exenteration. C. Z.

# ABSTRACTS FROM RECENT FRENCH OPHTHALMIC LITERATURE.

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## QUARTER ENDING DECEMBER 31, 1899.

### Iritomy for the Purpose of Freeing the Iris from the Cornea.

DE WECKER, Paris. (*Annales d' Oculistique*, Sep., 1899.) de Wecker urges the advisability of freeing the iris from the cornea in cases of large adherent leucomata that complicate traumatic cataract. For this purpose he makes an incision in the cornea near the limbus, passing the knife through the peripheral border of the iris. He next introduces the blades of his iris scissors through the corneal incision in such a way that one blade passes between the iris and the cornea and the other back of the iris. Pushing the blade to the further edge of the false attachment the iris is cut parallel to the corneal wound and freed. Naturally he says this procedure also opens the anterior capsule of the lens. He has found that the results of the operation have been very satisfactory.

### The Bactericidal Action of the Tears.

VALUDE, Paris. (*Annales d' Oculistique*, September, 1899.) Valude removed the edges of the lids and the lacrymal puncta of a woman who was suffering with palpebral epithelioma and as an insufficient surface remained to keep the eyeball covered, the lid-edges were drawn together and sutured. A year and a half later the woman returned with a large cystic tumor due to retention of tears situated behind the closed lids. This fluid was carefully aspirated and its character was proven by chemical examination. The amount obtained was about twenty-two cubic centimeters. Experiments to determine its action upon the anthrax bacillus, the bacillus coli, staphylococcus aureus, the staphylococcus alba and the tubercular bacillus were then conducted. As a result the author determined the following facts:

1. The tears form a very poor culture medium for the anthrax bacillus, against which, even in the spore state, they possess a positive bactericidal action. This power is lost after prolonged heating at a temperature which is above that which is necessary for the coagulation of albumen.
2. If the bacilli coli are present in large quantity the lachrymal fluid permits their development but the fluid is an unfavorable medium as is proven by the fact that after contact, particularly if prolonged, the bacilli lose a part of their vitality as well as some of their physiological properties.
3. The lachrymal fluid is a poor culture medium for the staphylocci aurei which after remaining in the fluid for a period of eight days' time lost their power of again growing upon even a very nutritive medium.
4. The staphylocci albae grow for a time in the lachrymal fluid, but after a prolonged stay the germs lose their vitality. At the end of a month's time they have lost the power of growing in a favorable medium.
5. The lachrymal fluid has the power of retarding the infection which follows inoculation with a tubercular bacilli that have remained in it for some time.
6. From some experiments upon the reaction of the tears in eighty eyes which were afterward operated upon for cataract, it was proven that if the fluid was acid, the eye must as a rule be considered as being predisposed to post operative infection.

### The Connection Between Stenoidal Sinusitis and Diseases of the Posterior Cavities of the Nasal Fossae and Optic Neuritis.

DE LAPERSONNE, Lillie. (*Annales d' Oculistique*, September, 1899.) The histories of three cases are given. In each instance the neuritis was unilateral and was accompanied with stasis of the papillary vessels. Rhinoscopic examination revealed a sarcoma of the sphenoidal sinus in the first case. In the second case there was an infectious posterior rhinitis in which the sphenoid shared. In the third case there was a purulent posterior rhinitis in which the sphenoid shared. In the third case there was a purulent posterior rhino-pharyngitis. Operation for the removal of the cause produced no effect upon the neuritis which progressed steadily toward optic nerve atrophy.

The author leans toward the opinion that such infections are due simply to the proximity of the organs. He considers the attack as belonging to the class of infectious inflammation of the nerve. He properly urges the advisability of a nasal examination in all such cases.

### The Perception of Color and Visual Acuity for Colored Characters Upon Backgrounds of Graduated Shades of Gray.

NEUSCHULER, Rome. (*Archives d'Ophtalmologie*, September, 1899.) Neuschuler has attempted the solution of the three following questions:

1. What was the greatest distance at which he could determine the color of a character five millimeters high against a background which passed through all the shades from black to white.

2. What was the greatest distance at which he could determine the form of a character under the same conditions.

The third series of experiments were to compare the results thus obtained, and to represent the deductions in figures and draw the curves for each color.

Over two thousand experiments were performed in the following manner. At one end of a dark hall fifteen meters in length was placed an electric motor that was capable of making twenty-four hundred revolutions per minute. Upon the flywheel of this motor was fixed a black and a white disc so placed that one might superimpose the other to any desired degree—thus making by their revolution on the disc any wished for shade. In front of the disc was a piece of transparent glass. This was fixed and upon it were placed the characters. The colors chosen were red, blue, yellow and green, each being of the same luminous intensity and of the same degree of relative tint.

It was found that the color of the red letters could be distinguished against a black back ground, the maximum visual acuity being obtained against a light gray one, and the minimum against a slightly shaded gray one.

The perception of the yellow was worse against a black background, and best against a clear gray one. Visual acuity for letters of the same color was best against a clear gray ground, and worst against a pure white one.

For the green letters, the color was best seen against a pure black background, and worse against a dark gray one. The form of the letter was most readily determined against a clear gray ground and most poorly against a dark gray one.

For the blue, the color was best distinguished against a gray ground of almost equal parts of white and black, while it was the worse seen against either a pure white or an absolutely black background. Visual acuity for the character was at its height with the background of light gray, and was lowest when it was placed against an absolutely black one.

In the experiments for comparing the curves for color, it was found that the red, which is seen best of any in the black and dark gray, is surpassed by yellow in medium gray. After this, red has the priority, green starts far below the red at black, falls in dark gray, rises in a medium gray, and ends in white below its starting point. Yellow and blue start below the other two at black, blue ending much the lower; from which point they ascend (yellow rapidly, blue slowly) to a point situated between the medium and the clear gray, at which place the yellow rises above the red and the green. From this place they both fall to the white, where the yellow ends slightly below the green, and the blue about opposite the starting point.

The curves for form perception were quite different. The red line starts at the black side of the chart as the highest of all, from which place it gradually falls until in the medium gray it is the lowest of all. From this point it again rises, and in the clear gray passes above the green and the yellow and meets the blue—these three having commenced to descend from their highest points.

The green starts just below the red and falls rapidly until the dark gray is reached, at which places it commences to ascend—at first rapidly and then gradually—until it reaches the light gray, where it reaches its highest point. In this situation it is alone surpassed by the descending blue. It ends but slightly below the red.

The blue and the yellow start almost together, the blue being slightly above. They ascend together, but in the dark gray the blue becomes the higher, preceding thus till they reach a point between medium and light gray, where blue is the highest of all, with yellow second in number. Both then fall—the blue ending with red, and green below the other three.

### Alternating Ophthalmoplegic Migraine.

DENICHERI, Paris. *(La Clinique Ophtalmologique,* September 25, 1899.) Demicheri's case is for two reasons quite exceptional.

1. The age of the patient (sixty-four years at the time of the first attack and seventy years at the time of the last attack).

2. In the author's observation there was not exclusively a repeated or a periodical paralysis, but there was an alternating paralysis which first attacked the left eye this being accompanied by a facial paralysis. Six years later it attacked the right eye. In this attack there were the classical characteristics of a migrainic paralysis. The second attack was repeated some five months later.

### On the Processes of Intraocular Nutrition.

LEBER, HEIDELBERG. *(La Clinique Ophtalmologique,* October 10, 1899.) Leber holds to the belief that the largest part if not all of the fluids which nourish the vitreous humor, the crystalline lens, and the aqueous humor are furnished by the ciliary body, from which they escape by filtration through the walls of the blood vessels. He denies that the anterior surface of the iris takes part in this type of nutritive act. The fluids, he says, pass into and through the bodies which they are to nourish by a process of diffusion. The cornea, he believes, receives most of its nourishment from the marginal circle of vessels, as well as possibly from the aqueous humor. In the case of epithelial tissues, the fluids pass through the intercellular space; while if there be any intercellular tissue they pass through its meshes.

### Neuro-Paralytic Keratitis.

VON GROSZ, BUDAPEST. *(La Clinique Ophtalmologique.* October 10, 1899.) From a series of experiments, Von Grosz has arrived at the following conclusions:

1. The suppurative form of keratitis which occurs in animals after section of the trifacial nerve, and in the human subject after wounds, compression, pathological

alteration, resection of the nerve, or facial paralysis, is due in each instance to the same cause; that is, an infection which may arise from the conjunctival sac of the lachrymal sac, or a direct form of infection by contact. This development is aided, he says, by a dessication of the cornea, which is consecutive to an anesthesia of that membrane—and hence its poorer protection.

2. The cause of essential neuro-paralytic keratitis in man, which is identical with kerato-malacia and kerato-necrosia, lies in the ciliary ganglion. It is due the author believes, to a degeneration of the ganglionic cellules, which in its turn may be provoked by cachexia, by local hemorrhages, or by wounds.

### The Treatment of Simple Glaucoma by Galvanization of the Cervical Sympathetic.

ALLARD. *La Clinique Ophtalmologique*, October 25, 1899.) In this operation Allard proceeds as follows: The negative pole of a galvanic battery furnished with a flexible electrode of very large surface, is applied to the neck and back of the patient. The positive pole is fitted with a tongue-shaped electrode from eight to ten centimeters long, and from two to two and a half centimeters wide, the electrode being additionally covered with warm wet absorbant cotton. The positive electrode is applied to the patient's neck at and parallel to the anterior border of the sterno-mastoid muscle, in which position it is held in close apposition to the skin by rubber bands that pass around the neck. The current is applied progressively until it reaches an intensity of from fifteen to twenty milliamperes and with a force of about twenty volts. This is continued for from fifteen to twenty minutes and then gradually reduced. Three seances are held weekly. Ten cases were treated in this manner, all of them during the present year. Two left before treatment was finished. In two instances in which vision was hopelessly lost, the intense pains that had resisted all other forms of medication, were completely stopped after a few sittings. In three patients vision was much bettered in less than two months' time. In one patient a rapidly progressing glaucomatous form of atrophy was arrested. Two cases which were seen at the beginning of the disease were cured.

### Is Iridectomy Useful in the Treatment of Chronic Simple Glaucoma.

ROGMAN, Gand. (*La Clinique Ophtalmologique*, Oct. 25, 1899.) As a control test, Rogman performed irodectomy upon the worse eye of a young girl who was suffering from double chronic simple glaucoma. Miotics were then instilled into each eye three times a day. The operated eye began to improve steadily, whereas the other went from bad to worse, until about a year after the operation, the patient requested that the unoperated eye be treated in a similar manner as the operated one. The procedure being done improvement followed. The author states that he has searched in vain in his and other cases to find some guide as to operability. He is of the opinion that the best rule, in view of the extremely grave prognosis if the disease is left to itself, is to operate upon the worse eye first. If this should prove successful the other eye may most probably be operated upon.

### A Case of Monocular Glaucoma with Resection of the Superior Cervical Ganglia of the Great Sympathetic.

IATROPOULUS, Constantinople. (*La Clinique Ophtalmologique*, October 25, 1899.) The patient seen by Iatropoulus was a man fifty-six years of age. The left eye was affected with chronic simple glaucoma, intraocular tension was plus, and vision equalled one-fifth of normal. The visual field was concentrically contracted. The cornea was clear and the anterior chamber was normal. The media were transparent.

A broad iridectomy was performed, this being followed six weeks later by a sclerotomy. As neither of these procedures influenced the course of the disease in any way, the author finally decided upon performing a unilateral sympathectomy. This was done three months after the sclerotomy. Neither during nor after the last operation could any change be noticed in the eye. When last seen by the author the eye was rapidly progressing towards a fatal issue.

### On Pseudo-Accommodation in Aphakia.

ROGMAN, Gand. (*Annales d' Oculistique*, October, 1899.) Rogman based his studies upon the eyes of some patients from whom he had removed the crystalline lenses for the removal of high degrees of myopia. It was found that the patients possessed a pseudo-accommodative power of from two to five diopters, vision at the far-point however being better than that at the near-point. In common with Von Graefe he considers that this power is due to the so-called neutralization of the circles of diffusion. He believes that patients should be advised of the power, which he states is less in those in whom an iridectomy has been performed.

### A Case of Traumatic Enophthalmus.

ROHMER, Nancy. (*Annales d' Oculistique*, October, 1899.) Rohmer reports the case of a boy of fourteen years of age, who was struck over the eye by the head of a horse. In a few days' time he had apparently recovered. In from fifteen days to three weeks' time after the accident, failure of vision of the eye with diplopia was complained of. About this time the patient's parents noticed that the eye was considerably sunken. When seen by the author the lids were half closed over the eye ball, which had become depressed from three to four millimeters behind its fellow, giving an appearance which closely simulated that following enucleation. To raise the eyelid required an effort of the muscles of the corresponding brow. The pupil was slightly dilated and the iris was slow in its movements. The motion of the eye was greatly limited. Vision equalled three-tentns of normal. The retinal veins were slightly dilated and the optic disc somewhat pale. At the time of the accident there was no hemorrhage from either the mouth or the nose, thus in measure eliminating any idea of fracture. The author attributed the deformity to a loss or a diminution of the orbital fat with trophic disturbance due to an injury to the nerves.

Under the influence of the use of a continuous electrical current the boy commenced to improve, but unfortunately he was lost sight of before treatment was completed.

### Cataract Extraction by Incision with an Adherent Conjunctival Flap.

PANSIER, Avignon. *Annales 'd Oculistique*, October, 1899.) Pansier commences the procedure by making an ordinary sclero-corneal incision involving about one-third of the circumference. When this is completed with the exception of five or six millimeters, the knife is inclined to a horizontal plane with the globe instead of a forward one, and is made to pass as far as possible under the conjunctiva. It is then withdrawn without cutting off either end of the flap. Iridectomy may or may not be performed in accordance with the nature of the case. The crystalline lens is then gently extruded. If the flap is placed in the middle of the wound the lens will catch beneath it, in which place it should be allowed to remain until the eye is freed from the cortical matter. If the flap is not central, the lens will escape from the side of the greater angle. The toilet completed, the iris is replaced and both eyes are closed. The patient is allowed to remain in an arm chair, or even to walk about a room until evening.

At the end of twenty-four hours' time the bandage is removed from the sound eye, and four days later it is taken off the other.

The advantages claimed for the operation is an exact closure of the wound with its more rapid cicatrization. The disadvantages are the greater difficulty of the method and conjunctival hemorrhage. The author states that should hemorrhage be excessive the eye may be closed for a few moments and then bathed with cold water.

To remove any cortical masses during the simple form of extraction he prefers to employ a small curette.

### Observation of a Young Girl Attacked at the Same Time with Myxedema and Parenchymatous Keratitis.

GRANDCLEMENT, Lyons. (*Annales d'Oculistique*, October, 1899.) The patient was seventeen years of age. Her father and mother and two brothers were apparently healthy. She, however, had fairly well marked Hutchison's teeth with the characteristic form of the palate. The myxedema which lasted nine months' time, commenced in the abdominal region from which situation it extended to the arms, the legs, the face, and the throat. Toward the end of this period of time the right eye became affected with a parenchymatous form of keratitis, the left eye soon following in a similar manner. By the administration of iodothyrine accompanied with piperazine and lactate of strontium the myxedemic symptoms disappeared in fourteen days' time. The eyes were treated by another physician who employed atropin and hot compresses, informing the family that the child would be "nearly blind" for a period of time from eight to fifteen months, and that traces of the disease would permanently remain. After two months' trial of this form of treatment she came under the care of the author. He immediately instituted massage of the cornea. By the end of one month's time the patient had recovered sufficient vision to be able to walk about easily, followed three months later by a complete restoration of vision—thus proving, as he says, the rule established by himself some eighteen years previously that, in nine cases out of ten, massage of the eye cures the type without Hutchinson's teeth in sixty days' time, and in ninety days where the teeth are present.

### Extraction of the Crystalline Lens in Order to Remedy Pupillary Obstruction.

JOCQS, Paris. *(La Clinique Ophthalmologique,* November 10, 1899.) In commenting upon a case of this nature recently reported by Santos Fernandez, Jocqs recommends a preliminary artificial maturation by his method of injecting a few drops of aqueous humor in the substance of the crystalline lens.

### Double Sub-Conjunctival Luxation of the Crystalline Lenses.

TERSON FILS, Toulouse. *(La Clinique Ophtalmologique,* November 10, 1899.) The patient seen by Terson first suffered a luxation of the lens of the left eye, caused by a blow from the horn of a cow. From this he recovered with a vision about equal to that obtained by a cataract operation under ordinary circumstances. Six years later (January, 1899) while stooping he struck his head, rupturing the old scar. This was accompanied by a loss of vitreous humor which was followed by atrophy of the eye and total blindness. One month later a young bull struck him in the right eye causing an immediate and complete loss of vision. When seen by the author in March it was found that the injury to this eye as to the other consisted in a subconjunctival luxation of the lens. Although the author successfully removed the lens and treated the eye energetically the man remained blind

As symptoms of this accident Terson mentions the presence of the lens in the false position, the folding trembling, and tearing of the iris, hemorrhage into the anterior and the vitreous chambers with lowerd intraocular tension. Prognosis, he says, should always be guarded. He advises against an immediate operation, preferring to wait three or four weeks' time, taking care to close any wound.

### Retardation of the Formation of the Anterior Chamber After the Operation for Cataract and its Treatment by Massage of the Cornea.

TRANTAS, Constantinople. *(La Clinique Ophtalmoligique,* November 10, 1899.) Trantas reports the histories of three cases of delayed formation of the anterior chamber following cataract operation. The first patient was a diabetic, sixty years of age. Under treatment the sugar had disappeared before the operation was performed. On the fourth day after the procedure it was noticed that the anterior chamber had not become reestablished. Atropin was instilled daily and by the tenth day the chamber had become properly formed, reestablished. The second patient was an alcoholic, fifty-five years of age. By the fifteenth day the anterior chamber had not filled. The author massaged the cornea gently. The following day the chamber was reestablished, although the wound was not entirely healed until one month after the operation. In the third case massage was applied on the fifth and sixth days. On the seventh the chamber was filled.

### Traumatic Expulsion of Both Crystalline Lenses.

THILLIEZ, Lillie. *(La Clinique Ophthalmologique,* November 10, 1899.) The patient, a woman, had her right eye injured by the horn of a cow. A few months afterward she struck the left eye against a bar of iron. When seen by the author both lenses were wanting, the scars of the wounds being plainly seen. The irides presented the appearance seen after an iridectomy. In the right eye there was a secondary cataract and the vitreous contained a few floating bodies. Vision with this eye equaled one-fiftieth of normal. The pupil of the left eye was black and the vitreous humor was almost free from opacities. Corrected vision with this eye for distance equalled one-fourth of normal. -

### Experimental Plastic Operations on the Eyelid.

NEUSCHULER and DEOBARDIO, Berlin. *(Recueil d'Ophtalmologie,* September, 1899.) The experiments were divided into four groups: (1) The skin was removed from the eyelid and replaced in its original position. (2) The skin from the right eyelid was placed upon a wound in the left eyelid and vice versa. (3) Skin from the back was grafted on the eyelid of the same animal. (4) Skin from the back of one animal was grafted upon the eyelid of another animal.

Of the first series three out of four were successful; of the second, two out of six; and of the third and fourth, one out of four.

Conclusions: 1. The replacement of all losses of substances, of no matter what nature, should be secured by means of a plastic operation.

2. According to both clinical and experimental results, the best method is that of the pedicled flap.

3. This flap should be formed from skin that is adjacent to the wound. Should this prove impossible, the Italian method should be the second choice.

4. Transplantation, properly speaking, is of use in those cases in which the other methods are unavailable.

5. Among the methods of transplantation homoplasty occupies the first place.

### Papilloma of the Cornea.

DEMICHERI, Paris. (*Archives d'Ophtalmologie*, October, 1899.) The growth seen by Demicheri consisted of two lobes, which covered the upper portion of the cornea, and was attached to the upper conjuuctiva. It was removed once, but recurred. After the second removal, which was followed by a careful cauterization of the parts involved, the case was cured. The tumor consisted almost entirely of epithelial cells that were so arranged as to form papillae. These were lined with columnar epithelium which gave way to the polyhedral type, and this in turn to the pavement variety. At the first time of the removal of the growth, the papillae contained a few vessels and some connective tissue but after the recurrence of the tumor it was found that the vessels had almost entirely disappeared. There were no inflammatory symptoms, though there was some new vessel formation in the upper portion of the conjunctiva, which supplied nourishment to the mass.

### Studies on Ocular Diphtheria.

HENRI, COPPEZ, Brussels. (*Archives 'd Ophtalmologie*, October, 1899.) Coppez presents a careful review of the work done by himself and others on the pathology and the bacteriology of this disease. The general conclusions formulated throughout the article are: There is no hard and fast line between the croupal and the diphtheritic membranes, the one merging into the other; the diphtheritic bacillus, the pseudo-diphtheritic bacillus and the bacillus of xerosis are distinct, one from the other.

Three tests are employed in his laboratory to determine the nature of germs sent for diagnosis in cases of suspected diptheria; (a) direct microscopical examination of the discharge; (b) cultures on serum, agar; and (c) the double coloration test of Neisser. For further bacteriological study a second culture, on bouillon, is made, and a guinea pig is inoculated.

He believes that on account of the almost constant presence of the xerosis bacillus, the diagnosis of diphtheria of the eye by means of bacteriological tests is much more difficult than is the diagnosis of diptheria of the throat. He has found that the corneal lesions in diptheritic inflammation of the eye are always secondary. The lacrymal fluid, he says, has no direct action on the toxine, and when the toxic material flows into the conjunctival sac, it retains all of its virulence. He has noticed that the cornea is not affected if its epithelium remains intact. Hence he says it is advisable in all cases of diphtheria of the eye (a) to protect the cornea by frequently anointing the conjunctival sac with vaseline, and (b). to inject the antitoxine under the conjunctiva in order to form a protective ring around the cornea.

The toxine of streptococcus, he asserts has apparently no action on the cornea than it has on simple bouillon; and this whether it is injected beneath the conjunctiva or into the anterior chamber, and with or without previous lesion of the cornea.

The toxine of pneumococus is not sufficient of itself to cause a definite lesion of the cornea. To obtain this he has found that it is necessary to inject the living organism into the corneal tissue.

### A Case of Spontaneous Hemorrhage Into the Vitreous Body with Detachment of the Retina.

JARNATOWSKI. (*Recueil d' Ophtalmologie*, October, 1899.) The case reported by Jarnatowski was that of a man thirty-five years of age, who became suddenly blind in the right eye while passing the morning in the street. The onset was not accompanied by any either general or local pain. The man had always enjoyed good health, there not being any evidence of albuminuria, diabetes, rheumatism, gout, haemophilia, or syphilis. He had never suffered from headache or palpitation of the heart, nor had he ever noticed any difficuly in respiration.

After the accident the eye was not inflamed. The pupil was slightly contracted, and the iris reacted slowly. The iris trembled during the movements of the eye. The tension of the organ was lowered. Vision was reduced to light perception which was better on the temporal side of the field. With the ophthalmoscope nothing could be seen but a dark reflex. With oblique illumination a red reflex was obtainable. A diagnosis of spontaneous hemorrhage into the vitreous chamber with detachment of the retina was made. By means of the application of leeches to the temple, combined with the alternate application of atropine and eserine, the blood mass was absorbed sufficiently in a few days time to allow of a partial view of the fundus. By the end of two weeks nothing remained of the hemorrhage except a few floating bodies. A large detachment of the retina in the infero-external portion could then be seen. There was not any sign of a tear. Movements of the hand could be distinguished in the remaining field. The author attributes the accident to the following causes: Some weak point must have existed in the chorioidal vessels which was due to either an overlooked arterio-sclerosis, or to an old chorio-retinitis. Owing to some undue exertion on the part of the patient this gave way, producing a post-retinal hemorrhage which gave rise to a separation of the retina. A probable tear of the retina in its forward potion gave rise to the hemorrhage in the vitreous chamber.

### Ocular Motor Paralyses of Traumatic Origin.

PANAS, Paris. (*Archives d' Ophtalmologie*, November, 1899.) Panas believes that it remains to be proven, at least in the generality of cases, that separation of the tendons of the extraocular muscles from the sclerotica (as is usually admitted) occurs as the result of traumatism of the muscles. Among the traumatic nervous types of paralyses, those that are due to basilar injuries are by far the most common, while those that are dependent on nuclear lesions are the exception. He says that from the age of ten years up, the paralyses are due to, as a rule, fractures of the base of the skull, and rarely to blood clots, or meningitis. He thinks that the inverse is the case in infancy and early childhood; in which group he has found the paralyses most frequently due to lesions of the venous sinuses of the dura mater—oftenest the inferior petrosal. Congenital concomitant strabismus he says does exist, and may be caused in part by mechanical pressure on the head, the result of which is to provoke meningeal hemorrhages that are capable of compressing the nerves in their intracranial courses.

### Granular Conjunctivitis with Complete Corneal Pannus, Cured by the Use of Jequirity. After Failure of the Ordinary Methods.

TERSON, PERE, Bordeaux (*Annales d' Oculistique*, November, 1899.) For over a year the patient seen by Terson has been unable to earn a livelihood on account of a granular conjunctivitis, while for six months he had been unable to see to walk about. Both palpebral conjunctivae had been brushed; two peritomies had been performed on the right eye; the granular surfaces had been rolled with the Knapp instrument; the granulations had been cauterized with points of fire, nitrate of silver, and sulphate of copper; and bichloride of mercury had been employed; none of these methods had benefited him at all.

When seen by the author the disease was very marked. There was a complete pannus of each cornea. Yellow oxide of mercury was tried with no apparent result other than to slightly check the secretion. Jequirity powder, allowing it to remain six minutes, was then tried, this being followed by an attack of typical jequiritic conjunctivitis. About twelve days later a second and a milder in strength application of the powder was made. By the end of a month's time the patient was able to see to walk alone. Later, sulphate of copper in the form of glycerole was employed continuously. At the time of the writing of the article, which was eight months after the employment of the jequirity, the eyes were apparently normal, and the patient was able to see to read without difficulty.

The author considers that the use of jequirity is contra indicated in the papillar forms of granular conjunctivitis; in cases of false granulations (as in the tarsal lymphoma of de Wecker); in the early or florid stage of the disease; in the absence of pannus; and in cases in which the necrotic processes produced by a previous application are still in existence. He believes that the drug is indicated in cases of trachoma, which are associated with pannus, particularly if the disease be old and the tissues are in a regressive state; above all he has found it of great use where there is but slight associated secretion.

### The Apparent Coloration of the Subconjunctival Vessels.

JITTA, Amsterdam. (*Annales d' Oculistique*, November, 1899.) Jitta presents a careful review of the laws governing reflection and refraction dependent upon disturbances in the dioptric media. He believes that the violet color of the subconjunctival vessels is due to the mixture of the red of the blood and the blue color caused by the light that passes through the conjunctival membrane.

### A Case of Paralysis of the External Recti Muscles.

QUERENGHI, Milan. (*Annales d' Oculistique*,, November, 1899.) The patient seen by Querenghi was a boy, seventeen years of age. The left eye was turned in at an angle of twenty degrees. The right one deviated inward two degrees. In neither eye was there any excursion of the eyes to the temporal sides of the middles of the fields. The author performed an advancement of both external recti including the conjunctiva in the suture. One week later the patient was pronounced practically cured, there being about five degrees of overcorrection. The patient complained of diplopia for a period of a few days but this symptom disappeared under the influence of stereoscopic exercise training. At the time it was noticed that although the patient could turn his eyes inward for the purpose of following a lateral movement the power of convergence was absent. The author considers his case to be one of congenital paralysis of the external recti due to a nuclear disturbance connected with the sixth pair of nerves. He is of the opinion that the case tends to corroborate Fryer's theory as to the existence of separate centres governing the act of convergence and that of lateral deviation. Moreover, he suggests that this center was undeveloped in the case of his patient owing to the lack of use, and consequently he is of the opinion that there is hope that the stimulus produced by the better condition of the eyes and the need of convergence may bring about the development of the centre and with it the function of convergence.

### A Case of Bilateral Purulent Dacryocystistis Cured by the Use of Gelatine and Protargol Sounds.

LEONARD, Sedan. *(Reçineil d'Ophtalmologie,* November, 1899.) The patient was seventy-three years old. He came complaining of an acute exacerbation of a chronic dacryocystitis of the right eye with fistula associated with a chronic dacryocystitis of the left eye. The author slit the upper canaliculus of the right eye, stretched the internal palpebral ligament, dilated the canal with Bowman's probes of increasing calibres and irrigated the affected mucous surface with antiseptic solutions. In five or six days' time the fistula was closed, and at the end of sixteen days the condition, with the exception of a slight purulent discharge, had disappeared. The left sac and the duct were treated in a similar manner and were benefitted. Six months later the patient returned to the clinic complaining of an abundant discharge of pus from each. side. The author again dilated the canaliculi to number six size of Bowman's sounds. He then substituted a gelatin sound coated with fifty per cent. of protargol for the metallic probe. This sound was left in place. Each day a fresh gelatine sound was introduced, alternating its use between the two eyes. Three sounds were used in each eye. By the end of twelve days the suppuration had ceased and pressure over the sac expelled but a slight amount of clear liquid. One month later the condition remained the same.

There was some pain described by the patient as similar to a toothache with swelling and redness of the eyelids after the introduction of the sounds. This was particularly so after the first sound had been introduced but the symptoms lasted but a couple of hours. The author suggests that to avoid this complication sounds containing twenty-five per cent. of the protargol should be employed at first.

### Dionin and its Action upon the Lymphatic Circulation of the Eye.

DARIER, Paris. *(La Clinique Ophtalmologique,* December 10, 1899.) Darier does not speak in very enthusiastic terms of the use of dionin in ocular surgery. As a rule he has found its use to have been disappointing. The first few applications of the materials employed either in the form of collyrium or injected beneath the conjunctival membrane produced marked reddening and chemosis; but a tolerance is soon established and even the pure powder seem to produce but little or no effect. The author has found the drug of some use in cases of irido-choroiditis with synechia and in corneal infiltration. He has seen good come from it in the absorption of crystalline masses.

### Papilloma of the Cornea and Methylene Blue Dressing.

DEWECKER, Paris. *(La Clinique Ophtalmologique*, December 10, 1899.) de Wecker reports a case of papilloma of the cornea in which the base of the growth and its point of attachment formed a ring around the limbus of the cornea, leaving the center of the cornea clear. The mass was excised and its area of attachment was touched each day with a solution of methylene blue beginning with the day following the operation. This the author asserted had two advantages; first, that the drug has a decided action upon neoplasm of this nature; and secondly, the drug stains the raw surface a deep blue tint. A few granulations which appeared after the operation were excised and their basis were touched with the solution. The growth did not return.

# ABSTRACTS FROM RECENT SPANISH AND PORTUGESE OPHTHALMIC LITERATURE.

BY ALBERT B. HALE, M. D.,

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## Quarter Ending December 31, 1899.

### Contributions to the Study of the Cataractous Lens.

DEMICHERI, Uruguay, (*Anales de Oftalmologia*, February, March and April, 1899.), has a long article dealing with the conditions induced in the cataractous lens. He uses three subdivisions: False Lenticonus, Mummification, Interference Rings.

*False Lenticonus.* In examining patients with beginning cataract, vision is often lower than opacification would warrant. Such cases report that—the reverse of the usual—they see better with weaker and weaker lenses, or even develop an acquired myopia. D. asserts that this is due to increase of refraction in the lens, but is not a lenticonus proper; the ocular axis is more refringent than the periphery. This is due to changes in texture and nutrition between cortex, nucleus, periphery and center. He divides into four classes the signs of primary alterations of the senile lens. (a) Catoptric phenomena of the nucleus, which has become separated from the perinuclear masses by fissure and absorption of liquid, producing changes in refraction. This is seen in studying Purkinje's images. (b) Spherical aberration and keratoscopic shadows. (c) Refractive and visual changes. Although convex lenses increase visual acuity, concave lenses are preferred by patients, and the presbyopic correction required does not correspond to the age. (d) Dirty yellow or greenish pupillary reflex.

*Mummification.* This term he uses to signify black cataract (pathologic), sclerosis. Here the pupil has not a whitish reflex and the study of Purkinje's images must be made; there is also a reddish reflex discernible, most marked centrally, and shown when examining the lens by very bright focalized light.

*Interference rings.* In studying the lens by oblique illumination, the center of the pupil will be greenish, while toward the periphery a reddish tinge will be seen. This he ascribes to alterations in the capsule, although others have referred it to the anterior portion of the cortex. As this sign is discoverable in many cases where the ophthalmoscope shows no opacity of the lens itself, Demicheri thinks that it may be taken as of great diagnostic importance in the beginning of cataract. He also thinks that an eye presenting this phenomenon, even if the lens is still transparent to rays from the ophthalmoscope, is much easier to operate on—before it is ripe—than any other variety.

### Sympathetic Nerve Section in Exopnthalmic Goiter.

DEMICHERI and LOMAS (Article read before the Medical Society of Montevideo and reported in the *Anales de Oftalmologia*, May, 1899.) wish to add to the written experiences concerning this operation, narrate a case with decided improvement traceable directly to the surgical procedure.

J. N., laborer, 24 years old, had exophthalmic goiter. He was taken ill ten months before, having palpitation, enlarged neck, general weakness and protruding eyes. A brother had the same disease, the rest of the family being well. On examination there was tachycardia of 140, a vascular pulsitile goiter, unsteadiness of the limbs, exophthalmos of 16 millimeters, and other general signs. On December 1st, 1897, the patient was operated on for the first time, but the anatomical appearance of the nerve was so confusing that the surgeons were not quite sure that they had found the sympathetic. Results were so good, however, that they decided to operate on the other side. Before the second operation (January 3rd, 1898) the pulse had fallen to 120, and the general condition had improved very much. Improvement was now immediate, both in the patient's feelings and in the slowness of the pulse and retreat of the eyes within the orbit. On October 7th, 1898, the patient felt well; his pulse was 105, the eyeballs had receded four millimeters, and there was a gain of ten kilograms in weight. Graefe's sign had disappeared in one eye, and the ocular tension was less.

This may not be a cure, but it is a very encouraging result.

### Eye Complications Following Lagrippe.

GONZALES (*Anales de Oftalmologia*, May, 1899) gives his experiences with eye complications following grip. He has noticed (a) paralysis of internal rectus muscle, (b) paralysis of ciliary muscle, (c) hyperemia disc and retina, (d) chorio-retinitis. He is very careful to trace these troubles to grip and to exclude all other causes.

### Simple Extraction of Cataract in Glaucomatous Eyes.

SANTOS-FERNANDEZ (*Anales de Oftalmologia*, May, 1899) thus answers four questions put to him: (1) What was the vision before and during the attack of glaucoma, when the eye was operated on for cataract? (2) What was the degree of ripeness of the cataract? (3) Were the operations complete or no? (4) What was the vision after the operation?

(1) Vision was practically reduced to perception of light. (2) The lenses were ripe. (3) It was probable that cortical masses may have remained and perpetuated the irritation. (4) Vision after operation was improved. He thinks that in every case of his, the glaucomatous attack was subdued, and that some useful vision was retained which might otherwise have been lost.

### Blindness After Hemetemesis.

FERNANDO, Lopez, Mexico (*Anales de Oftalmologia*, September, 1899), reports the case of a man, 45 years old, in good health, who had a severe and unexplained attack of vomiting blood, which soon yielded to treatment. One month after, on making great muscular effort, he was attacked again, this time with bloody vomit and stools. He was unconscious for five days, and on recovering, was blind. Examination showed dilated pupils and optic atrophy. No sign of hemorrhage. Treatment was useless.

### Poisoning With Scopolamin.

DEMICHERI, Montevideo, gives two cases. The first was a child in whom the drug had been used for a corneal wound. There was transient delirium. The second was due to a disk of scopolamin (Merck) used for iritis. All precautions were taken to avoid absorption, but in spite of everything there was intense intoxication, paralysis, insensibility and vaso-motor disturbance. This all passed off within twenty-four hours. (Unfortunately the author fails to give the dose prescribed.)

### A Case of Entropion Cured by Electricity.

CIRERA, (*Revista de Ciencias Medicas*, May, 1899,) reports a case of facial paralysis on the left side in a man of 60, where electricity was of great value, but there still remained an entropion at the middle of the left lower lid, the cilia acting as a continuous irritant to the conjunctiva. Cirera resorted to the method of Bordier (of Lyons) without result. He then introduced a needle about one centimeter below, into the skin parallel to the lid edge; the needle was attached to the negative pole (primary current) of a battery having a good rheostat and milliamperemeter; the positive pole was placed at the neck. A current of six milliamperes was used for five minutes. The needle was withdrawn. As was to be expected, the tissue became emphysematous and formed a ridge along the border of the lid. Absorption took place, a cicatrix formed which gradually drew down the misdirected hairs and restored the lid to its normal function.

The author thinks this method especially applicable to the entropion of such a character.

### Tatooing of the Cornea.

CERRILLO, (*Revista Medica de Sevilla*, April, 1899,) relates a fortunate experience with tatooing of the cornea, in spite of the fear expressed by some that the operation might lead to sympathetic ophthalmia. He had performed iridectomy on a patient for optical purposes, as an old corneal scar had greatly impaired the eye's vision. The patient, however, declared that she saw worse after the the operation than before. Tatooing was then done to reduce the pupillary area, and vision rose at once to nearly normal.

### Acute Edema of the Eyelids.

VELEZ, (*Annales de Oftalmologia*, No. 2, 1899,) narrates a case in a woman who caught cold during her fifth month of confinement; some neuralgia but no paralysis followed, when there suddenly appeared an intense edema (chemosis) of lids, but no pain. Otherwise the eye was not at all affected. Salicylate of soda and pilocarpin cured in six days; the attack must therefore have been rheumatic.

### Sympathetic Ophthalmia Forty Years After the Original Injury.

FINLAY, (*Progresso Medico*, Nov., 1899,) reports such an event in a woman 50 years old, who, when ten years old, had been wounded in the right eye by an arrow. The eye became atrophied and there was no trouble with it till December, 1896, when she suddenly felt pain in the eye one night, with injection of the stump, apparently without cause. The left eye still remained normal. As the pain and injection of the stump continued, enucleation was proposed, but refused. At the end of March, 1897, the pain increased, and the left eye now showed some fogginess and photopsia; the edges of its disc were obscured, the vitreous contained opacities, but the iris remained normal; there was no ciliary injection, and V.=1.

Enucleation of the stump was performed in May, 1897. Seventeen days after there was exudation at the edge of the iris, and V.=3/4. With all signs of cyclitis, Vision sank to 1/10, but the disease was stopped with the retention of useful eyesight.

### Optic Neuritis in Pott's Disease.

SANTOS, FERNANDEZ, (*Cronica Medico-quirugica de la Habana*, vol. 24, p. 227,) describes a unique case of (tuberculous) neuritis, associated with disease of the vertebra, the only other similar eye cases he has been able to find being spinal miosis or mydriasis from irritation of the sympathetic.

His case was that of a girl of 14, with phthisical ancestry. Shortly after coming under observation, she was noticed to have some difficulty in turning her head on account of pain in the back of her neck, due, as the attending physician recorded, to scrophulosis of the vertebrae. Vision then began to fall till it became 1/20 in the right eye, and mere finger counting in the left. The ophthalmoscope revealed optic neuritis in both eyes. The patient gradually failed, and died a month later.

# ABSTRACTS FROM RECENT DUTCH OPHTHALMIC LITERATURE.

BY

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Quarter Ending December 31, 1899.

### The Surgical Treatment of Striped Keratitis.

STRAUB. ( *Weekblad v. Geneesk*, September 16th, 1899.) In a contribution to our knowledge of this subject, Straub alludes to the deposition of colloid, hyalin and chalky substances that oftimes occurs during the formation of such stripes. The author does not entirely agree with the idea of Leber and others that Bowman's membrane is thickened with corallike excrescences and that the outermost layers of the substantina propria are not free from infiltration. These bands (so called idiopathic striped keratitis) appear in eyes undermined by disease, in that portion of the cornea found between the half closed lids. However, they are not uncommon in very old people whose eyes are otherwise normal. When such bands cover the pupil, Straub usually resorts to the following method (with which he claims to have been uniformly successful): Using the Graefe knife, as recommended by Fuchs and deWecker, he enters it carefully at the margin of the opacity and slices or peels off the opaque band of epithelium, which regenerates itself in about two days. The only objection to the operation is the high irregular astigmatism it creates, hence it should be done only when the patient's vision is so poor that an improvement of 1/6 or 1/4 is considered important by the surgeon or the patient.

Straub showed a patient (before the Amsterdam Surgical Society) who had submitted to this operation 3 1-2 years before. Immediately after the operation the vision was but 1/60. At the present writing one can recognize the margin of the old stripe as two narrow, yellow streaks between which the cornea is entirely clear with the exception of a very small brown macula. The post-operative irregular astigmatism has entirely disappeared and vision equals one-half.

Sometime ago the fellow eye began to develop a similar striped keratitis for which the patient was admitted to the hospital and contrary to all expectations recovered under medical treatment (treatment not given), with ultimate vision of 3/100. The author purposes slicing off the cloudy epithelium of this cornea later. He believes that his results show the epithelial changes to be primary and that the changes in Bowman's membrane are really secondary.

### Well Marked Tabes Dorsalis Without Loss of the Pupillary Light Reflex.

DEBUCK, D. (*Med. Weekbl.*, September 16, 1899), refers to a man of 50, for twelve years the subject of locomotor ataxia, whose case was of note: 1, in that there was increase of knee jerk with loss of the tendo Achilles reflex; 2, in that the auditory nerves were profoundly involved; and 3, in that no Argyll-Robertson phenomenon could be elicited. More or less interest attaches to the case because the light reflex seldom escapes involvement in long standing tables. The disease began in the neurons of the left hand passing up to the level of the upper dorsal and lower cervical segments of the cord, and then, without in any way affecting the ciliospinal connections, passed on to interrupt the function of the auditory neurons. According to G. Wolff, the loss of the pupillary light reflex depends upon a lesion of the posterior columns of the cervical portion of the cord. Further, Hoeben and Huet have shown that the sympathetic neurons proceed from the cervical cord upward to the central gray matter surrounding the aqueduct of Sylvius and the ganglion

Habenulae. This same central gray matter, according to Bechterew is the path of the light reflex from the optic nerve to the oculomotor nucleus. In the presence of normal optic nerves, an Argyll-Robertson pupil is explainable only by assuming a lesion of the gray matter of Sylvian aqueduct, or if the association system between the oculomotor nucleus and the ciliospinal center, or finally of the last named center itself. Both the latter are in connection with the cervical cord. DeBuck feels that the clinical phenomena in his case do not support Wolff's findings unless it is assumed that in DeBuck's case the tabetic process reached as high as the 7th cervical segment, but spared the 6th and 5th segments. This is, in all probability, what happened.

### Quinin Amblyopia with a Striking Eyeground.

STRAUB. (*Weekblad v. Geneesk*, Oct. 7, 1899,) reports the case of a man who, on the advice of an empiric, took 3 grams, (45 grains) of quinin at one dose, followed in three hours with great depression, terrible fullness in the ears, developing in a couple of hours into complete deafness and blindness. The deafness passed gradually away in three days, but after 5 days from the time of ingestion' of the quinin, the patient appeared at the clinic still blind. The ophthalmoscope showed at this time a pronounced retinal edema all about the papilla, the vessels being entirely obscured by the edema. The fovea centralis presented the appearance seen in embolism of the central artery. By the 14th day the edema had disappeared entirely when the pupil was found to react sluggishly. There was no return of light perception until the 26th day, from which point improvement went on slowly, resulting however in very poor vision and an exceedingly narrow visual field, albeit the retinal light was preserved well out into the periphery, showing that its functions were not entirely in abeyance. The final appearance of the eyeground was that of optic atrophy, one of the vessels showing especial constriction at one spot, and the arteries exhibited gray lines accompanying them, the result of arteriosclerosis.

### Blepharitis Ciliaris and Demodex Folliculorum.

MULDER'S investigations, (*Weekbl. v. Geneesk*, Oct. 21, 1899, are quite confirmatory of Raehlmann's (*Deut. Med. Woch.*, Dec. 1898,) in that both workers found that the hair root, just above the bulb often shows a peculiar twisting with strong pigmentation of the hair bulb. In such cilia the hair is generally surrounded spirally by a peculiar hyalin cord. Mulder often found such cilia when acari were present, but has also seen them in patients on whose lids not a parasite could be found, and yet the same kind of cilia were to be found in the brows and scalp of patients free from parasites—so that this condition cannot be held to be characteristic of the presence of acari. Mulder found the acarus much more frequent than did Raehlmann, encountering them almost without exception in all cases of slight ciliary blepharitis, also in blepharitis squamosa, and in that form characterized by the presence of a yellow waxy substance around the roots of the cilla. Nothwithstanding the acarus. itching is not always complained of. Mulder considers Raehlmann's estimate of 2 per cent. for the frequency of the acarus as far too low. Mulder has further met with this parasite in blepharitis furfuracea, blepharitis ulcerosa, and even in two people suffering from hordeoli. His experience is against balsam of Peru ointment, advocated by Raehlmann, as it is too irritating, and moreover, is not fatal to the parasite. The difficulty lies in the fact that the parasite lives deep in the follicle, and that remedies that might be fatal to the acarus would in all probability not be borne by the eye. The author is seeking for a remedy that will fulfill these requirements.

### Modification of Pagenstecher's Ptosis Operation.

KOSTER, (*Weekbl. v. Geneesk*, Oct. 28, 1899,) proposes the following modification of Pagenstecher's ptosis operation. A single suture is entered above the brow in the substance of the occipitofrontalis or the corrugator supercilii, hidden beneath the skin and, thus hidden, passed down to the level of the lower margin of the tarsus of the upper lid. It is then carried across the lid on this level, (still beneath the skin) and then passed upward the same way it was brought down; finally the suture is brought out of the substance of the muscles above the brow on a level with the point of original entrance. The sutures which are of silk are to be tied in a surgeon's knot so tightly that the patient shall be able to just barely close the lids. Within a few days after the operation the patient must forcibly close the lids and continue this practice until the eyelid falls normally when the patient goes to sleep. Koster's idea is that a fine connective tissue string forms in the place of the thread which takes a crosswise course through the tissues. When the lids are closed, this string of now-elastic tissue assists raising the lids. The operation as done by Pagenstecher in pre-antiseptic days sometimes gave a permanent effect, but the aseptic methods of to-day have so hastened the process of repair that the results of Pagentecher's operation seldom endure more than a fortnight—hence the modification proposed.

# ABSTRACTS FROM RECENT AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

J. GUTTMANN, M. D.

NEW YORK.

Quarter ending December 1, 1899.

### Additional Report to the Treatment with Protargol in the Therapy of the Eyes.

WICHERLICVIZ, PROF. in Krakau. (*Wiener Medicin. Wochenschrift.* November 18, 1899.) Last year he published his experiences with this valuable remedy in the Opthalm. Klinik No. 18. There he emphasized that this remedy possesses an especially high value in the treatment of blenorrhea conjunctivae, of blenorrhea of the lacrymal sack, and in the treatment of ulcera corneae when they are caused by the above named affections. His consequent experiences not only confirm his previously written assertions, but even increase the number of indications for the use of protargol. Following, he reports the positive results obtained by this remedy.

He first used protargol (following some favorable reports of others in the treatment of trachoma) once or twice daily. With a cotton swab dipped into a 5 to 10 per cent. solution of protargol he rubbed the trachomatous conjunctiva. The patients generally allowed this treatment with scarcely any expression of pain. He came to the conclusion that the remedy is very effective in the first stage of acute granulation. The process is so shortened that the affection, which ordinarily lasts for months, and sometimes even for years, was cured after 1 to 2 months. But even after this kind of treatment, the affection leaves characteristic scars, which, however, are not as broad and deep as in cases where the affection was not treated scientifically, or was left entirely without treatment. As soon as the affection of the eye improves, the eyelids are rubbed with the protargol swab only 2 to 3 times weekly, and during the intervals the patient instills a protargol solution of 1 to 2 per cent several times daily. To avoid argyrosis, which not infrequently appears also after the use of protargol, the patients are advised to make the instillations in a room which is not very bright, and to wash their eyes with boric acid. In cases of pappilar trachoma, the treatment of protargol was also quite effective. He claims that it is certainly as effective as a solution of 1 to 2 per cent. argentum nitricum, and has the advantage that it does not irritate the eye as much as the latter. In both affections the secretion diminishes considerably, and in some cases ceases entirely. Chronic granular trachoma was not benefitted as much by this treatment as by the treatment of argentum nitricum, cuprum sulfuricum, galvano-caustic puncture, etc. The use of protargol is justified only then, when there is yet a muco-purulent secretion. If this stage is passed, then we must apply astringent or caustic remedies. As stated above, he used in suitable cases a 5-10 per cent. solution. He tried a 20 per cent. and even a 25 per cent. solution, expecting by this more energetic procedure to abridge the affection, but this kind of treatment did not prove satisfactory.

Then he used this remedy in the treatment of spring catarrh (phlyctaena pallida) and he was able to show good results where other remedies were quite inefficient. He always found after rubbing the conjunctiva with a 5 per cent. solution that the red phlyctaenulae on the limbus and the papillar granulations on the milky white conjunctiva of the lid diminished considerably.

What especially speaks in favor of the efficacy of the new remedy is that the patients without even being asked, assert after a few days of treatment that the irritative sensibility of the eye is very much diminished.

Later, he found protargol a very effective remedy in the treatment of certain forms of marginal inflammation of the lids, especially in blepharitis ulcerosa. Although warm applications, with antiseptic solutions, epilation, mercurial ointments, xeroform, aristol salve, lapis, etc., are quite effective in the treatment of this affection, still there are severe forms which do not yield to any of these remedies. Here protargol proves itself to be very effective, as it has the ability to enter into the depths of the tissues. He then used protargol in suppuration of the vitreus originating either primarily after injuries at the entrance of septic bodies into the vitreous, or secondarily after metastatic choroiditis, which threatened to develop into panophthalmitis. Recently he injected protargol into the eyes of two patients where the perception of light was entirely gone, enucleation and evisceration was denied, and great pain existed. These injections did not produce the least little pain, and the inflammatory symptoms, as well as the copious secretions, decreased very rapidly. He therefore recommends this remedy as very effective in intraocular suppuration.

### A Portable Dark Box for Ophthalmoscopic Purposes.

MAXIMILIAN BONDI. (*Wiener Klinische Rundschau*, December 17, 1899.) This dark box consists of a dark cloth extended over several hoops. When extended, it affords place for the heads of the patient and of the physician, and enables the examination of the eye in erect and inverted image. The light is produced by a small lamp, which is fastened on the forehead of the patient by a headgear, electric current being furnished by accumulators. This dark box is used only where it is impossible to darken the room.

### Iritis Hemorrhagica.

SOLOMONSOHN, H. (*Wiener Klin. Rundschau*, October 22, 1899.) The structure of the iris is richly supplied with bloodvessels; they are partly the cause of the different colors of the iris. We would therefore think that here, also, as in other tissues, which are richly endowed with bloodvessels, as the retina or kidney, hemorrhages are often to be found associated with inflammations. Experience teaches, however, that hyphema from iritis is quite rarely observed, excepting when due to traumatism.

The text-book of Graefe-Saemish states that only exceptionally was very vasular inflamed iritis, accompanied by a hemorrhage in the anterior chamber. Other elaborate text-books do not even mention this symptom in the symptomology of acute iritis. Hutchinson considers this hyphema as a very bad symptom in iritis syphilitica, and as a constant sequel of a rare form of iritis arthritica. Reche publishes three cases of iritis hemorrhagica, on rheumatic bases. One of these patients was syphilitic. Among 240 cases of iritis specifica, v. Schroeder found hyphema only twice. The author therefore considers himself sufficiently justified in publishing a case of specific iritis, accompanied by hyphema.

P. I., acquired syphilis in 1892; secondary symptoms developed. The patient underwent a treatment of inunction. He was free from any symptoms till November, 1897, when an inflammation of the right eye developed, which, according to the description of the physician in charge, must be considered as a case of iridocyclitis plastica. The first symptoms were: Intense pericorneal and equatorial injections of bloodvessels, deposits on the membrana Descemetii cornea, hyperemia of the iris, gray stripes on the anterior capsule of the iris, pain on pressure in the region of the corpus ciliaræ. Vision, R. 6/18 with —2.5 D.; L. =6/18, with — 2.0. D. Synechia appeared in the pupil. A grayish-yellow pseudomembrane made it impossible to transilluminate the pupil. Tension was normal. The patient was subjected to an inunction treatment, which made all the symptoms disappear. On January 4, 1899, the patient, who was 25 years old, came under the author's observation; he had then suffered five days from a slight redness on the inner corneal margin. The bloodvessels were no more numerous than as if caused by a light phlyctenular irritation. The pupil, which was dilated by atropin, showed thick adhesions of the iris to the capsule of the lens. As other symptoms were missing, this might be considered as residua of an old iritis. Through energetic instillation of atropin during the whole day, these synechia were torn. The ophthalmic picture was clear and normal. Treatment: Scopolamin, 0.2 per cent, five times daily; Kalii jodati, 10.0: 200.0.—One tablespoonful three times daily; warm applications. January 6: Pericorneal injections more intense, new posterior synechia on the upper margin of the iris; slight cloudiness of the anterior chamber, but no pain, and no sensitiveness on pressure in the region of the corpus cillaræ. Tension, normal. January 7: The cloudiness and injection more intense. In the lower part of the pupil there is a gray pseudomembrane on the anterior capsule. Some pain on pressure on the corpus ciliaræ. Tension, normal.

January 8: Deep dark-red injection of the entire bulbus; the pupilary membrane larger. Intense spontaneous pain. Slight pain on pressure. Tension, normal.

January 9, a third part of the anterior chamber filled with blood of brown red color, which easily follows every motion of the head. Intense spontaneous pain, but slight sensitiveness on pressure. On the left (healthy) eye: swelling of the upper lid with sense of pain on pressure under the orbital margin in the region of the lacrymal gland. Patient is taken into the Klinik. On the way there a new intraochlar haemorrhage in the right eye, which filled half of the anterior chamber. The pupil is narrower.

The patient is kept in a dark room with perfect rest in bed. He receives 3.0 gr. unguentum cinereum inunction. He continued to take potassium iodide internally, warm applications on the affected eye and sodium salicylic internally. Atropin 1 per cent. and scopolamin in 0.2 per cent. solution was instilled. Until the 15th of January the hyphema was resorbed. Pain on on pressure on the corpus ciliare during this whole time very slight, but continuous very intense pain and injection of middle wide pupil. Tension was never abnormal. Vision enough to distinguish subjects in the room. After the resorption, the pain ceased, the iris became now dilated by mydriatics. The vitreous became entirely clear. The vision continuously improved.

R. 6/6w. — 2.0 = 0.5 cyl. p.
L. 6/6w. — 1.5 = 0 75 cyl. oblique.

This could not be considered as an iritis rheumatica or arthritica, but the history as well as tho plastic exudation pointed to a specific nature of the inflammation.

The difference between the first and second attack is noteworthy. The symptoms of the first attack, as pain on pressure in the region of the ciliary body, deposits on the posterior wall of the cornea, cloudiness of the vitreous decided decrease of vision, all these symptoms plainly pointed to a diagnosis of cyclitis, the symptoms of the second attack did not justify such a diagnosis.

It is evident that if iritis is complicated with hyphema the case is a serious one and should be treated only in the hospital. If the patient is kept at perfect rest, bleeding in the anterior chamber does not make the prognosis worse, as the exudation soon absorbs.

### The Eye in Anthropometry.

POLLAK, A. (*Wiener Medicin. Wochenschrift*, September 16, 1899.) The object of anthropometry, according to Bertillon's investigations, is the identification of recaptured criminals who endeavor to conceal their identity by assuming a false name. The procedure consists in keeping a record. The individuals to be measured are divided into three groups, according to the length of the skull, whether they are large, medium or small. Each of these three groups is then subdivided, according to the breadth of the skull, the height of the body, etc., until, finally, there remain groups consisting of very few individuals it should be a comparatively easy task positively to identify an individual in one of these subgroups, especially with the aid of photographs.

No one will dispute the originality of these observations, but it is more than doubtful whether the method is applicable to all cases. His object is to show how necessary it is to extend these observations of Bertillon, and with what caution we must accept his results. One of the principle and serious defects in the system consists in the fact that for the greatest part the measurements are made of the long bones. The growth of the body does not stop until quite late. In one of the recent sessions of the Academy of Medicine of Paris, Championniere presented a man who grew 5 cm. between his 20th and 23d years, and 8 cm. more between his 23d and 27th years. Although this case is exceptional, yet we know that the growth of the bones does not cease before the 23d year of life. All measurements, excepting those of the skull, on persons under 23 years of age are therefore of no value. When we consider the large and increasing number of criminals who are under this age, we see how palpably worthless the Bertillon system of measurements is. But the measurement of adults is not such a simple matter as Bertillon assumes. The only one of Bertillon's measurements that is absolutely valuable, is that of the ear; relatively valuable are those of the length and breadth of the skull; all others are more or less worthless.

Bertillon did not meet with much success in his description of the iris. It is his belief that the eye offers us several important points for consideration in connection with anthropometry. The growth of the eye may be considered as completed with the 16th year of life, and in future it will therefore be one of the most important factors in the description of young criminals.

The pupillary distance may be next in importance. This measurement may be obtained very simply by measuring from the bridge of the nose. The pupillary distance often, but by no means always, bears a certain relation to the breadth of the skull. A pupillary distance of 61 to 65 mm. might be described as medium, and others, as either large or small. There may be variations of ½ mm., but this is of no importance, for we are not considering the absolute measurements, but the relative measurements—large, medium or small.

The optical condition of the cornea furnishes us with quite important data in the connection. In the study of this subject he made use of the Kagenaal ophthalmometer. With the exception of astigmatic eyes, we may describe two principle meridians in each cornea—one horizontal and one vertical—perpendicular to each other.

The most frequent variation is the rotation of this system of meridians in one or another direction by several degrees.

In the 600 individuals whom he examined in Prof. Fuch's eye clinic, he found this rotation of the meridians in 30 per cent. of the eyes. He believes this percentage is larger than is ordinarily found, because his investigations were for the greatest part on unhealthy eyes complicated with anomalies of refraction.

Once we determine the position of the principal meridians, it is an easy matter to recognize the presence of astigmatism and to measure it in dioptres.

We may now classify individuals as falling in one of the following groups:

1. The principal meridians are vertical and horizontal.
2. The principal meridians are perpendicular to each other, but are rotated at angle of 45°.
3. Where an astigmatism of 1 diopter is present.
4. Those that do not come under class 1 or class 2. This class comprises all cases of irregular astigmatism, and cases of strabismus.
5. Where one eye differs materially from the fellow.

We possess a most important measurement in the curvature of the cornea; not one of Bertillon's measurements approaches in the remotest degree such mathematical exactness. We make use of the Kagenaal ophthalmometer, with which we are able to read off the curvature of each corneal meridian in dioptres.

Differences between the eyes of an individual are rare, but I have found such, and they were quite considerable.

We must also take into consideration the formation of coloboma of the lids and pupils, or only manifestations of such, synechia, heterochromia, naeva iridis. The last named findings are of especial importance, and it would be of value to put such cases as possess any of these characteristics into one group. An examination with the ophthalmoscope will show whether the fundus is granular, striated, or albinotic. Inasmuch as the condition of the fundus is unvariable and distinct, he regards this as of great importance for purposes of classification.

But also in other ways the manifold appearances of the fundus, as revealed by the opthalmoscope, furnish us with a large amount of material for observation.

He considers it of the greatest practical value to ascertain the presence or absence of pigment in the vicinity of the papilla. We might classify all cases as falling into one group which show pigment in any form. Out of one hundred eyes 10 will show pigment in some form.

The presence of the physiological excavation affords another very important point for classification; of 100 eyes 35 show this.

The so-called inverted distribution of the blood vessels, and the existence of a conus will often enable us to characterize a certain number of individuals.

In addition to the shape of the papilla (round, oval, &c.,) and its borders (sharp, indistinct), the refraction of the eye could also be taken into consideration. It would be an easy matter, and of great value, to classify all individuals having a high degree of hypermetropia (above 3D) or of myopia, into certain groups.

Although no anthropometric examination alone would give us a perfect result, yet a combination of Bertillon's measurements with an examination of the eye would undoubtedly be of great value.

# ABSTRACTS FROM RECENT RUSSIAN AND SCANDINAVIAN OPHTHALMIC LITERATURE.

BY

A. BARKAN, M. D.

SAN FRANCISCO, CAL.

(Quarter ending Dec. 31, 1899.)

### On Treatment of Blenorrhoea of the Eye by Largin.

WELANDER, EDWARD, Stockholm. *(Archiv. für Dermatologie und Syphilis Bd. XLVI, Heft. 3.)* The author uses a new silver preparation, Largin, for blenorrhoea of the eye, which Pezzoli tried in Finger's Ambulatorium in the Algemeineskrankenhaus in Vienna, seems also to give excellent results in blenorrhoea of the eye. Largin was applied with a brush five to six times a day to the everted conjunctiva, or Largin gelatin leaflets were placed under the upper lid; these take about 15 minutes to dissolve; the Largin is to remain directly on the mucous membrane for a rather long time. The solution used was 2 per cent. The contributor of the Ophthalmologische Klinik observes that the time of healing with Largin is not shorter than with the preparations hitherto used. Further observations would be of interest.—From Die Ophthalmologische Klinik.

### The Width of the Lid Opening in Trachoma.

LOBANOW, S. *(Wochenschrift für Therapie und Hygiene des Auges. Vol. III, No. 5.)* From measurements of 272 healthy persons and 594 persons suffering from trachoma, the author concludes that a narrow lid opening is favorable to the production of trachoma. Length of lid opening varies in the men from 18 — 32 mm. (average 25 mm.); in women from 17 — 30 mm. (average 24 mm.); and 3 — 11 mm. (average 7 mm.) in men and women respectively.

### On the Therapeutic Effect of Vibratory Massage in Various Diseases of the Eye.

SNEGIREW. *(Centralblatt für praktische Augenhkde,* November, 1899. *Deutsche Med. Ztg.*, 1899, No. 5.) The instrument constructed by the author uses the electric spring of Edison, in which the needle is replaced by a little ivory ball, which makes 9000 vibrations per minute. Ninety-one patients successfully treated: Follicular catarrh was cured in 2 to 3 weeks, sometimes in 4 to 6 applications; more stubborn cases in 2 to 6 weeks. This method is especially efficient in scars and spots of the cornea, even in those of years' duration. In parenchymatous keratitis, the cornea had a better appearance, and the sight of the eye was bettered immediately after the application. In one case of severe keratitis all symptoms disappeared after 17 applications. Successful effects were secured in three cases of serious iritis; in three cases of purulent keratitis, and in one case of iridocyclitis after typhus recurrens. Eight cases of scleritis, defying for two months all treatment, were cured in five days; also several cases of chronic blepharitis. One application lasts 1 to 10 minutes; rarely daily—usually every other day—or every three days.

### Proving the Power of Vision in Suspected Cases of Dissimulation.

KRÖGER, A. (*St. Petersb. Med. Wochenschrift*, 1899, No. 3. *Centralb. für praktische Augenhkde*, November, 1899.) Since for Russian service a minimum visual power of 20—40 is necessary, it is not sufficient to prove absence of ametropia, corneal maculae, etc., but the examiner must rely, to some degree, upon the recruit himself. To cope with dissimulation the author has invented a Snellen's table, which has the same letters, but in which the letters decrease in a given ratio from chart to chart. In Snellen's charts the letters are to be read at 200′, 100′, 70′, 50′, 40′, whereas, in the author's charts the rows are read at 160′, 80′, 50′, or at 120′, 60′, 42′, etc., and at 100′ 50′, 35′, etc. Thus, if a subject reads at the first trial to the third line, it is to be expected that he, if he be a fraud, will constantly stay at this third line, thus varying from 20—70 to 20—35 in going from the first to the last chart. The charts are in looks exactly the same, and are to be shown at intervals of a day, or other examinations are to be conducted between the different trials, so that the subject may not detect the difference in letters. Truhart (Dorpat) considers this method only applicable to "guileless and pleasant" recruits. Thinks the skiascope the best instrument for the purpose. Levy is against a too great reliance in skiascopy, especially in cases of irregular astigmatism.

### The Question as to the Presence of Ganglion Cells in the Iris.

ANDROGSKY, N., St. Petersburg. (*Archives of Ophthalmology*, Vol. XXVIII, No. 5. Translated by Dr. W. A. Holden.) For demonstration, eyes of white rabbits were chosen, and the living tissues stained with a $\frac{1}{20}$ per cent solution of Ehrlich's methylene blue.

Considering statements of other writers, and author's own findings, author answers question as follows:

1. In iris itself, i. e., in the course of its nerves and in the region of the sphincter, ganglion cells are wanting. The ganglion cells described have been confused with either the triangular nuclei of the nerve fibers, or the branched stroma cells of the iris.

2. Ganglionic structures in the form of bipolar or multipolar nerve cells are found only in the superficial nervous network of the ciliary processes.

As to the function of these ganglion cells, while possible that they belong to the motor nerve system of the iris, it is more probable that they belong especially to the ciliary processes, and serve as a regulating center for the vessels, and hence for the secretion of aqueous humor.

### On the Changes in the Eye After Ligation of the Gall Bladder.

DOLGANOFF, W. (An experimental contribution to the knowledge of ophthalmia hepatica. *Archives of Ophthalmology*, September, 1899, No. 5; translated by Dr. W. A. Holden.) The subjects chosen were dogs.

1st. Subject: 1. Edema of the optic nerve and retina. 2. Distension of vessels of the retina and choroid. 3. Infiltration of the optic nerve, and nerve fibers and ganglion cell layers of retina, with leucocytes. 4. Fibrinous exudation between choroid and retina, and in choroid itself. 5. Beginning thrombosis of individual retinal vessels. 6. Increased thickness of nuclear layers of retina; and 7. A fibrinous exudation in the vitreous. Degeneration in ganglion cells, in rods and cones, in pigment epithelium.

2d. Subject: Similar changes, with marked neuritis and perineuritis.

3d. Subject: Changes characterizing the beginning of an inflammatory process of the retina

4th. Subject: Exudative inflammation of the retina and choroid, and a beginning inflammation of the optic nerve.

Hence we may draw the following conclusions:

1. Coats of eye undergo marked inflammatory and degenerative changes.
2. Changes also in stroma of connective tissue, in vascular system and in the nervous elements.
3. Changes in connective tissue consist of proliferation of the nuclei.
4. Changes in vascular system comprise distension of the vessels, swelling of the endothelium, perivasculitis, enlargement of the spaces about the vessels, hemorrhages and exudations.
5. Affections of nervous system consist of various degrees of degeneration of protoplasm of the ganglion cells, alterations of the nuclei and enlargement of the spaces about the cells.

All these changes point to a distinct cause for their origin and development, and can not be considered simply the expression of lowered general nutrition.

### On Blepharitis Acarica—A Disorder of the Lashes and Edges of the Eyelids as a Result of Parasites in the Eyelashes—(Acarus Folliculorum).

RAEHLMANN, E. (*Klinische Monatsblatter für Augenhkde*, Feb., 1899, p. 33-51. *Die Ophthalmologische Klinik.*) This parasite was overlooked on acconnt of the impracticability of its preservation, due to its large watery contents. It is best kept in fatty oil (living in castor oil up to 24 hours). The patient complains of falling out of the eyelashes and itching. A marked hyperemia of the intermarginal and of the outer skin of the edge of the eyelid is noted. Here branched venous vessels are visible through the epidermis. The edges of the lids show a half solid secretion like thickened honey or impure vaselin; conjunctiva is also generally irritated due to the presence of the products of the parasites.

As a remedy author proposes: Balsam peruviani, 2.0; lanolini, anhydr. 6.0; or balsam, peruviana, 2.0; lanolini, 4,0, 01, amyd. dulc. 2,0. The salve is applied to the edges of the half-closed evelids, and is allowed to remain for half an hour. Daily treatment is to be continued for a long time.

### On the Structure of the Choroides Propria in the Adult.

SMIRNOW, A. E. PROF. (*Graefe's Archives für Ophthalmologie, XLVII, 3, Die Ophthalmologische Klinik.*) Author was able to see, in sections of the choroidea, by means of staining with orcein, a fine dense network of elastic fibres lying between Bruch's membrane and the chorio-capillaries, which stood in direct connection with the subcapillary network of Sattler; and which is called by him, "Stratum elasticum subcapillare." Because of the position of these two elastic retiform membranes, *i. e.*, above and under the capillaries—membranes directly connected with each other in places—the capiliaries of the whole chorio capillary layer together with their perivascular lymphatics, are surrounded with elastic tissues. Further patho-histological investigations must show the influence of this anatomical order upon the regulation of the circulation of the blood, and upon the nutrition of the above mentioned portions of the eye.

### A Case of Abnormal Coloboma of the Choroid.

RUMSZEWIZ, K. (*Potep Okalistyczny*, April, 1899.) By an abnormal coloboma the author means one which is not directed downwards, as usual, but sidewards or upwards, a rarely occurring anomaly. He found in the literature 34 such cases in the year 1894, to which he added at that time two of his own, and he now adds still another observation. In the case of a person 40 years old, there was present a wide coloboma of the choroid in the left eye on the nasal side. A marked temporal diminution of the field of vision resulted; the patient, however, did not entirely lose her sensitiveness to light and even to color. The author set the question, as to whether, and to what degree, the retina in the vicinity of the coloboma remains. From repeated anatomical investigations it appears that the rotina sometimes really exists there, at least in a partly rudimentary condition. Clinical observation speaks for the existence of the retina, as in the quoted case, a part of its function may be seen in the above mentioned section of the field of vision.

However convincingly the development of the usual coloboma may be demonstrated by means of our embryological knowledge, the development of the eye in regard to the abnormal coloboma is not understood. Through the multiplicity of the clinical and anatomical characteristics of the published cases, the author is led to believe in a corresponding multiplicity of the causes of their origin.

### Comparative Skiascopic Refraction—Determinations Before and After Use ot Atropin.

CHORZEW. (*Russ. Militär-ärtzl. Journ.*, Dec. 8, 1898, p. 1487. *Die Ophthalmologische Klinik*. Author thinks that skiascopy is the most exact method for refraction determination; it is accurate to 0.5 D. His investigations show that an equal result was obtained in only 30 per cent. of the cases, before and after atropining; in 70 per cent. the results diverge to one side or the other. In most cases refraction was higher before atropining. The causes of axial myopia, the author considers a hereditary predisposition, to which efforts of accommodation stand aids.

### On the Correcting Influence of Lohenstein's Hydrodiascope Upon Cases of Keratoconus and of Irregular Astigmatism.

MAJEWSKI, V. C. (*Klin. Monatsbl. für Augenhkde*, May, 1899. *Die Ophthalmologische Klinik.*) Apparatus consisted of two capsules of tin united by means of a copper wire so arranged that their relative position could be changed. The free edge of each tin capsule is provided with means for inserting drain tubes of different sizes. Each tin vessel has in front a round opening, 27mm in diameter, which is closed wtth a strong plane convex glass (33 D.) This apparatus is filled with lukewarm, sterilized, normal salt solution, dropped in through a hole in the upper side of the capsules. The subject opens his eyes in the salt solution. By this apparatus the influence of an irregular curved, astigmatic or keratoconic cornea is neutralized. With a spherical glass, we may now correct any remaining ametropia. The application of the salt solution is harmless. A table of 14 cases shows the efficiency of the hydrodiascope, aided with spherical, hyperbolic or cylindric glasses.

# ABSTRACTS FROM CURRENT ITALIAN OPHTHALMIC LITERATURE.

BY CASEY A. WOOD, M. D.

### The Surgical Treatment of Functional Blepharospasm.

PES (*Annali di Ottalmologia*, XVIII, Numbers 3–4) gives a history of two cases of recurrent blepharospasm cured by the resection of the external nasal ramus of the first branch of the fifth nerve. This treatment he associates with the introduction of a metallic seton beneath the skin and those fibers of the frontalis muscle that take chief part in the spasmodic contraction. In about fifteen days the seton is removed, the muscular spasm having entirely ceased. This surgical procedure does not in any way lessen the sensibility or diminish the motility of the skin about the parts affected, and, in the cases mentioned, the palpebral spasm was entirely cured, with the exception of a slight winking. The author believes that resection of this branch of the nerve of sensation, with traction exerted by the metallic loop upon one or more of the muscular groups involved in blepharospasm, can be accomplished without danger of permanent anesthesia or postoperative paralysis, and that its success will follow in the great majority of cases. BARDELLI.

### Sympathetic Irritation and Ocular Tension.

NEUSCHULER has attempted (*Annali di Ottalmologia*, XVII, Nos. 3-4) to reply to the following questions: (1.) What is the effect of irritation of the sympathetic on the ocular tension? (2.) How does section of the sympathetic affect the tension of the eye? (3.) What is the relation between vasodilatation, vasoconstriction, hypertension and hypotension? (4.) In what way has section of the sympathetic or extirpation of the superior cervical ganglion affected the eye? For replies to the first two questions experiments were made with Fick's ophthalmotonometer, controlled by the manometer of Marey.

So far as the other two questions are concerned, he relied upon the ophthalmoscope and the microscope. The animals used in these experiments were rabbits and cats.

They were all anesthetized by inhalation, during which they all showed increased ocular tension. It is to be added that the comparisons were made while the animals were under the influence of the general anesthetic, and not with the normal tension. The conclusions were as follows: Irritation of the cervical sympathetic increases the ocular tension, not only in the corresponding eye, but on the opposite side; section of the cervical sympathetic diminishes the intraocular pressure within the eye on the side where the operation is done, but this diminution does not come on suddenly; it is not noticed until some time afterwards. Excitement produces a vasoconstriction, section a vasodilatation, readily observed by the ophthalmoscope, so that the intraocular tension advances side by side with a vasoconstriction, while diminution of the tension is associated with vasodilatation. The microscopic examination of eyes in which a section of the cervical sympathetic had been done revealed very plainly a dilatation of the vessels of the uveal tract, and in some instances miliary hemorrhages in the same region. Moreover, in those eyes upon which *paracentesis corneæ* had been suddenly made, these alterations were not so plainly marked, and in some of them no hemorrhages were discovered.

Finally, the author, having expressed his doubts as to the harmlessness of section of the sympathetic, concludes as follows: "Far be it from me to discourage an operation that appears to have a practical value in ophthalmic surgery, but one should not be blind to the dangers of such a procedure." BARDELLI.

### The Treatment of Keratoconos.

SGROSSO (*Annali di Ottalmologia*, XVIII, Nos. 3-4,) reports a case in which after the application of galvanocautery, following the rules laid down by Meyer, he was able to accomplish the following results; in the right eye, with a myopia of 16 D. the vision was improved from $\frac{3}{60}$ to $\frac{2}{3}$ without the aid of lenses and without interfering with the pupil. In the left eye of the same patient the visual acuity (M. of 4 D.) rose from less than $\frac{1}{10}$ to $\frac{1}{3}$. He embraces the opportunity to discuss and compare the various measures that have, from the earliest times, been employed for the relief of conical cornea, coming to the conclusion that the radical treatment of keratoconus should be confined to the use of those agents that produce a solid cicatrix that is capable of resisting ordinary intraocular pressure and whose contraction brings about a regular curvature of the cornea—in other words, the galvano-cautery. The cautery point should be applied to the temporal wall of the cone and, except in those unusual cases where the cone is very small and perfectly central or where it has become opaque, it will then be proper to cauterize the apex. In this way one produces a loss of substance as extensive and as deep as may be desired. This plan, together with subsequent antiseptic treatment, insures a leucoma with regular edges and with no greater loss of tissue than is required. With miotics and under the influence of the protracted intraocular pressure the resulting scar will eventually have the same curvature as the rest of the cornea. BARDELLI.

**A Clinical and Pathological Study of Intraocular Cysticercus.**

DE BERARDINIS (*Annali di Ottalmologia*, XVIII, Nos. 3-4), reports his experience of five cases which he has been able to study in the Neapolitan Clinic. He gives the following conclusions as the result of his experience: (1) The cysticercus, lying in the vitreous or beneath the retina, eventually brings about various alterations in the intraocular tissues, particularly an iridochoroiditis and detachment of the retina, more or less pronounced. (2) These changes are in direct ratio to the length of time that the parasite has resided within the eyeball. (3) The animal is soon surrounded by one; and sometimes by two adventitious cysts, within the first of which he remains for a variable time. (4) Of these the second is always the larger, although not always the better constructed. (5) The cyst walls consist of two layers, an external fibrous lamina and an inner endothelial or endotheloid layer. There may be a third coat, fibrinous in character, and of almost homogeneous structure. (6) That in the endothelial layer one often observes giant cells, more or less abundant and of variable size, containing nuclei, disposed without any particular order. (7) That these cells are not in any sense tubercular, but are produced by the irritation of a foreign body—the cysticercus. (8) That the cystic contents vary somewhat in character, but are often a granular, albuminoid exudation

—rarely purulent. (9) When suppuration sets in, it may be considered as accidental, probably due to bacteria. (10) That the parasite never produces a true migratory ophthalmia, but only an irritative or sympathetic affection of the second eye. BARDELLI.

### The (Rudimentary) Ophthalmoscopic Stigmata of Acquired Syphilis.

ANTONELLI (*Archivio di Ottalmologia*, VI, Fasc. 8, 1889), claims that, apart from the well-known classic symptoms of ocular syphilis, that the *remains* of a previous optic atrophy, retinal vascularity, chorioretinitis or of simple pigmentary disturbances of the chorioretinal epithelium, may be recognized as what he terms *rudimentary ophthalmoscopic stigmata*. These are practically the same in (the second-third stage of) acquired as in congenital syphilis, except that the lesions of the latter may be regarded as an attennation of those of the acquired disease. The extreme frequency of pigment disturbances in the chorioretina of syphilitics is an incontestable fact, and it corresponds to the pigmented syphiloderms. Moreover, the choroid being much more vascular and more freely supplied with pigment than the skin is more prone to dyschromia than the latter. These so-called rudimentary stigmata that have already furnished valuable information in the diagnosis of infantile syphilis, should not be overlooked in general medicine. These alterations in the ocular fundus may exist without giving rise to any subjective symptoms, either when they first appear or afterwards, and they should be searched for with the ophthalmoscope whenever syphilis is suspected. In this way much light may be thrown upon the origin of doubtful cases of general paralysis, tabes, etc. BARDELLI.

### A Contribution to the Study of Ocular Dermoids.

LODATO (*Archivis di Ottalmologia*, VI fasc. 9-10, 1899) reminds us that it was Ryba who, in 1853, first described the tumor in question. The author's case is as follows: Infant 6 months old; on the border of inner-outer quadrant of the sclero-corneal junction, left eye, a small tumor, reddish in color, extending about 4 mm. on to the cornea and 6-7 mm. over the ocular conjunctiva. It is slightly raised above the level of the globe. Its surface is smooth, and scattered over it are a few downy hairs. At a short distance from it one notices on the cornea three whitish spots. The pupil is displaced upwards and outwards, being pyriform in shape with the apex above. The pupillary space is occupied in the upper portion by a grayish membrane dotted over with points of pigment.

The microscope showed a tumor resembling generally the structure of the skin, being made up of an epithelial and connective tissue layer (derma) with undeveloped pappillae, in which were seen hair follicles and sebaceous glands. Within the epidermal layer of the tumor was noticed an area resembling the cornea, with a cellular structure that had undergone colloid degeneration. As to the dermal layer, it was observed that the broken down portions increased towards the deeper parts that had been transformed into granular debris. Finally, the author, after considering the alterations in the cornea, iris and pupil thinks that the tumor should be regarded as the remains of an intrauterine, inflammatory process, rather than as an anomaly of development. BARDELLI.

# OPHTHALMIC NEWS ITEMS AND ANNOUNCEMENTS.

(Under this heading the ANNALS will publish items of interest to its readers. Please address Dr. B. E. Fryer, 520 East Ninth Street, Kansas City, Mo.)

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Dr. S. D. Risley, of Philadelphia, has removed his office to 1824 Chestnut Street.

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Mr. F. A. C. Tyrell has been appointed Junior Surgical Officer at the Royal London Ophthalmic Hospital.

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Professor Cesare Paoli has been appointed the successor of Professor L. Guaiti at the University of Sienna.

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Dr. Clegg J. Gray has received the appointment of Assistant Surgeon to the Manchester Royal Eye Hospital.

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Dr. F. von Birsch-Hirshfield, the eminent pathologist, professor at the University of Leipzig, died November 20th.

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The editor of the Anales de Oftalmologia states that he has moved his office and residence to No. 19 Mesones street, City of Mexico.

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Dr. Melville Black, Dr. Bain and Dr. Coover have received the appointment of ophthalmic surgeons to the Jewish Hospital at Denver.

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At the annual meeting of the St. Louis Academy of Medical and Surgical Science Dr. James Moore Ball was elected president for the current year.

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Owing to removal of the publisher at the usual time for publication of the ANNALS, it was impossible to issue the journal until the last of February.

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Dr. Demichen, of Mountevideo has been added to the staff of editors in the Anales de Oftalmologia. Dr. Demichen was at one time chief of de Wecker's Clinic at Paris.

The ANNALS begs the indulgence of its readers for not including the 1899 index in the October number. It is issued with this, the January, 1900, number and is sent separately.

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The English translation of Bandry's treatise on "Injuries of the Eye in their Medico-Legal Relation," edited by Dr. Charles A. Oliver, of Philadelphia, will be issued very shortly.

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The Journal of Eye, Ear and Throat Diseases, which is published by the staff of the Presbyterian Eye, Ear and Throat Hospital, of Baltimore, will, in future, be a bi-monthly instead of a quarterly.

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Prof. Felix Victor Birch-Hirschfeld, who has long filled the chair of general pathology and pathological anatomy at the University of Leipsic, died on November 20th, at the age of fifty-seven years.

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Dr. Kenneth Scott, the well known ophthalmic surgeon, has resigned his position in the hospital at Cairo, Egypt, and has gone to reside in London; his residence there being 30. Harley street, Cavendish Square, London W.

◆

Dr. M. Borysickiewicz, Professor at the University of Gratz, Austria, died September 18th, 1899.. He was in his fifty-first year. He was, some years ago, assistant at Stellwag's clinic in Vienna. Besides being a very skill operator he was a thorough histologist. His researches as to the minute structure of the retina are well known.

◆

At a meeting of the Chicago Ophthalmological and Otological Society, November 14th, Dr. Casey A. Wood exhibited two cases of methyl alcohol intoxication: the changes in the fundus were typical. In the discussion Dr. Henry Gradle stated that he thought these cases proved the lesion to be a post-neuritic atrophy. At the same meeting Dr. William H. Wilder reported a case which he thought to be sarcoma of the choroid.

◆

"The evils of overwork have claimed, in the case of school children, the attention of the Swiss officials. In the Canton of Luzerne the provision is that no lessons shall be studied at home, and that only moderate tasks be required in the secondary schools. Ten minutes' recess every half-hour are called for, and a week's vacation every six or seven weeks. Attendance at school is not to begin before the age of seven years."—Ophthalmic Record.

◆

At the annual meeting of the New York State Medical Association, October 24, 25 and 26, 1899, among other papers the following were read: "Operative treatment of High Myopia by Removal of the Crystalline Lens," by Dr. Charles Stedman Bull, of New York;

"Eye Complications in Typhoid Fever," and "The Etiologic Relation of the Auto-infection and Auto-intoxication to Eye Diseases," both of the latter papers by Dr. A. A. Hubbel, of Buffalo, New York.

◆

Dr. Walter Albrand, of Berlin, concludes, after an observation of two hundred and ninety-five cataract operations, in Schölers' Berlin Clinic, that because of a series of cases, which seemed to accompany the simple extraction, of several iridocyclitis with hypopyon, occurring in a period of several months, without infection of the corneal wound, and from eight to fourteen days after the operation, the tendency has been to return to the extraction with iridectomy.

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At a meeting of the Ophthalmological Society of the United Kingdom, held November 9th, 1899, the new president, Mr. Anderson Critchett, being in the chair. Mr. Treacher Collins read a paper on two cases of primary neoplasm of the optic nerve. Mr. J. Griffith presented a paper on iritis as a sequel to Gonorrhea. Mr. Critchett, in his opening address, referred to his honored predecessors, and also expressed regret that his father had not lived to occupy the position of presiding officer.

◆

On Acoin as a Local Anesthetic in Subconjunctival Injections. Robert Brudenell Carter.—Carter has used acoin solution 1 to 100 by subconjunctival injection to produce local anesthesia in ophthalmic practice, and finds it a nonpoisonous local anesthetic of very prolonged action. It is also strongly antiseptic and keeps well in the dark. It is believed that its use will greatly facilitate the treatment of some of the more intractable inflammatory infections of the eye.—The Philadelphia Medical Journal.

◆

Many valuable ophthalmologic essays written in the German language are published by the University Press in the form of "Inaugural Dissertations." These are mostly by the younger men and are largely statistical, being compiled from the voluminous records of the University eye clinics. We take pleasure in publishing in this number of the ANNALS abstracts of a number of these, from the University of Giessen, made by Dr. Charles Zimmermann, of Milwaukee.

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Blindness in Finland.—The different degrees to which blindness prevails among various populations is always a matter worthy of study. J. Widmark has investigated the subject as regards Denmark, Sweden, Norway and Finland (Nordiskt Medicinskt Arkiv, August; New York Journal, October 25th). He finds that for every ten thousand inhabitants there are 5.3 blind persons in Denmark, 8.3 in Sweden, 12.8 in Norway, and 15.5 in Finland. The preponderance in Finland, which is not observed among children under ten years of age, is attributed to the great prevalence of trachoma. Curiously enough the "endemic" affects only the natives. —Sanitarian.

◆

Amblyopia from Hemorrhage.—Holden has experimentally investigated the blindness observed after profuse hemorrhage, which has been accounted for variously. He operated on two healthy dogs and later examined the eyes microscopically. The pathologic conditions were edema of the nerve-fibers and ganglion-cell layers of the retina, and some ganglion-cells beginning to show signs of degeneration. This will explain the ordinary cases of amblyopia following hemorrhage. In those unusual ones in which the sight disturbance takes the form of a central scotoma, while the ophthalmoscopic changes indicate retrobulbar neuritis, some special explanation is required which cannot be given except after pathologic investigation of each peculiar case. He also investigated the suddenly developing amblyopia which has been observed after ingestion of methyl alcohol, and finds that it comes under the same category, as due to the nutritive disturbances in the ganglion cells of the retina.—Archives of Ophthalmology.

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In the November issue of the Quarterly Medical Journal appears the following editorial note:

"We feel sure that the readers of the Quarterly Medical Journal will learn with regret that, in consequence of the pressure of other engagements, Mr. Simeon Snell has felt himself obliged to discontinue the editorship. The Journal, fortunately, will still have the benefit of Mr. Snell's advice and assistance, and he will, as heretofore, direct the department of ophthalmology. It is well that it should be placed on record that it was largely owing to Mr. Snell that the Journal was initiated, and it is to his organizing ability and unremitting attention that the development and continued success of the Journal are in great measure due.

"With this number the date of publication of the Journal has been altered, and it will in future be issued in the months of November, February, May and August.

"The department for abstracting has been reorganized and extended, and it is hoped that this effort to present a more complete résumé of current medical literature will meet with the approbation of our readers."

◆

Dr. Ludwig Bach, of Wurzburg, who has been experimenting in the production of antisepsis and asepsis in the conjunctival sac, believes that asepsis is more readily and easily accomplished by thorough cleansing with irrigation than with such of the ordinary antiseptic solutions as are in general use—that when of sufficient microbecidal strength, they are too irritating to be safe. The editor of this department would call attention to the fact that some of the pathogenic microbes in the conjunctiva find their habitat among the epithelial cells below the superficial layers, and cannot be reached and removed by mechanical means, unless these layers are also removed. Most of the antiseptic solutions, if they can be brought in contact with these microbes, will be found effective, even though they are safely weak: the trouble being that their action is only confined to the surface. There is one exception, and that is protargol, its penetrating power being remarkable, while in the strength of 2 per cent. it is quite unirritating.

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The officers of the Section on Ophthalmology of the American Medical Association of whom the Managing Editor of these ANNALS, is chairman, and C. E. Clark, of Columbus, O., secretary, submitted the following preliminary program of the section for publication. According to the desire of the sections and following the trend of the times, it has been deemed advisable to radically limit the number of original essays which may be read before the meeting. So many have been read in the past, which, though painstaking and of literary value, are not of the character that should be inflicted upon the foremost gathering of American oculists. The time of the meeting can only be allowed for discussion of theories that are yet *sub judice*, unsettled subjects, new medicines, methods of treatment or new theories substantiated by sufficient original research and laboratory work. An essay composed mainly of abstracts from antique or current literature or use of subjects or methods well known is more appropriately read before a local gathering of general physicians or a state medical society—that burial place of long winded essays—than before the most progressive ophthalmologists of America, brought together for the exchange of views on *fin de siecle* subjects. The officers desire to state that there is yet a place for a few more volunteer papers which are particularly desired from the younger element of our profession.

Pathological Society of Philadelphia.—At a meeting held December 14th, Drs. G. E. DeSchweinitz and J. D. Steele reported a case of sarcoma of the choroid and orbit. The patient was a man of 36, whose eye together with a tumor-mass in the orbit had been removed for sarcoma. There was recurrence at the end of 6 months, whereupon an extensive operation had been done with good results. The interesting features of the cases were the long duration of the growth—2 to 3 years; the unusual form of the growth—flat, not spheroidal; the lesions inducing the glaucoma; tumor-cells in the optic nerve and the central artery; and the value of the operative measures employed.

The ocular manifestations of malaria differ according as to whether they accompany an acute attack of the fever or malarial cachexia. The most prominent symptoms in malarial cachexia is the variation of visual power at different times. A case is reported in which the variation from $^6/_{24}$ to $^6/_{12}$ occurred twice at examinations within two weeks. The ophthalmoscope showed no sufficient reason for such disturbance in vision. Improvement in vision immediately followed the treatment by administration of quinin. In a second case there was marked ptosis of the right eye with conjunctival congestion. Dilation of the pupil, cloudiness of the cornea, slight increase of intraocular tension and intense pain were symptoms, with aggravation at regular intervals with exacerbations of the fever. The ptosis disappeared entirely, and the vision rose to what it was before the attack soon after beginning the administration of quinin and iron.—Phila. Med. Journal.

Chicago Ophthalmological and Otological Society.—At the December meeting, Dr. F. C. Hotz showed an interesting case of primary tuberculosis of the conjunctiva in a child, 5 years of age. The family history was excellent. Neither a tuberculous, nor specific history could be obtained. The diagnosis was verified by bacteriologic examination. Dr. H. W. Woodruff showed a young lady, 29 years of age, who had sclerokeratitis, Dr. Albert B. Hale exhibited a typical case of retinitis pigmentosa in a Russian. 23 years of age. Dr. Hotz also reported two cases of peculiar visual perversion. The first case, a girl of 10, was brought to him with the statement that the mother had given the daughter some medicine for nocturnal enuresis. After the girl had taken the medicine one week the pupils were enlarged and her sight was disturbed in a peculiar way. The medicine was discontinued, but the visual disturbance persisted. Two years ago when taking some medicine for the same trouble, her sight was disturbed in the same way for some time. She could not read with the book in the usual position, but read quite fluently when the book was upside down. At 20 feet the test-types looked to her inverted, but when the card was turned upside down the letters appeared straight and she read them correctly to No. 30 inclusive. With a 2.50 D. before the eyes she read the same letters when the test-card was in the right position, but could not read them (because they appeared upside down) when the card was inverted. Large objects, however, like persons or houses, did not look to her turned upside down. After complete atropinization the visual disturbance disappeared entirely. Case two was similar in many respects.—Phila. Med. Journal.

Ophthalmic Diseases at Jerusalem.—The annual report of the administration of the British Ophthalmic Hospital at Jerusalem (belonging to the Grand Priory of the Order of Hospitalers of St. John of Jerusalem in England) shows that the work of the last year, as compared with that of its predecessor, was almost stationary, mainly from the cause that it was as much as Dr. W. E. Cant alone could by any possibility accomplish. The applicants for admission were 1,182, the in-patients admitted 598, the new out-patients 4,481, the attendances on out-patients 12,080, the operations 1,330, and the administrations of anesthetics 683. Treatment at the hospital was, as in former years, greatly appreciated both by the inhabitants of Jerusalem and by the fellaheen of the surrounding country districts; and the Chapter of the Order of St. John has since the issue of the report sanctioned the appointment of an assistant-surgeon to Dr. Cant, so that out-patients may be seen 6 days a week. We observe that of the 598 in-patients 364 were admitted for trichiasis, and that of the 1,330 operations 917 were Snellen's operation (extended) for trichiasis of upper lid. There were 43 extractions of senile cataract, Among the 4,441 out-patients 712 had superficial keratitis, 696 keratitis with trichiasis, 437 chronic organic conjunctivitis, 422 adherent leukoma with cicatrix, and 170 were cases of cataract. The work done at the hospital certainly seems to merit generous support.—British Medical Journal.

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A special class of journals whose growth during the last decade has been phenomenal is the Trade Journals, many of which are seldom seen by the general public and the existence of some more or less interesting to the medical profession is not even suspected by them. One of the most widely known and successful journals is *The Keystone*, "The Organ of the Jewelry and Optical Trades." This is a monthly of something over 100 pages; about 50 of these are filled with well written articles and news relating to the jewelry and optical business. Advertisements are found on every other page; but in a publication of this character the "Ads" themselves are as interesting as the reading pages. A large department of this journal is devoted to optics and news of interest to opticians and jewelers who deal in optical goods. A series of more or less well written articles on optics, etc,, are published serially in the columns. The journal is well printed and contains strong editorials in regard to jewelers' and opticians' business; those pertaining to the latter, of course, are more or less tinged and tainted by trade spirit. The paper is an ardent advocate of "legal restrictions for optical practice." It seems, too, that the opticians and jewelers have their own rather large thorn in their sides, i. e., the existence optical fakirs at fairs and expositions and on the streets.

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We have received from Prof. Zehender, formerly of Rostock, now of Munich, a circular letter of which the following is a free translation. If the aged professor were not so well known a figure among the fathers of ophthalmology we might find it desirable to say something here of the very large and important place he has occupied among us for nearly half a century. We trust he may have many happy years before him and the ANNALS OF OPHTHALMOLOGY tenders him its best wishes and kindest regards. At the same time we welcome to the editorial ranks his very able successor —Prof. Axenfeld, of Rostock.

"To the readers of the *Klinische Monatsblätter für Augenheilkunde*. With this, the December, 1899, issue of the *Monatsblätter* I desire to say farewell to the readers of the journal and to relinquish the editorial pen to stronger and younger hands. Thirty-seven years ago (Dec. 15th, 1862) I laid before my *confrères* the prospectus of my intended work and asked not only for their advice and criticism but for their help and support. With a grateful heart I still hold fresh in my memory all of those—many of them now resting beneath the sod—who, during this long period, have faithfully and energetically supported me in making the *Monatsblätter* a permanent addition to ophthalmology in which every reader might take an interest and by which each one might profit. How far this purpose of mine has been fulfilled it is, of course, impossible for me to say, but in any event I trust that my pleasure and satisfaction in this editorial undertaking has been at least partially reflected in the readers' minds. From this time forward Prof. Th. Axenfeld, who has in past years been of very great assistance to me in the conduct of the *Monatslbätter*, will alone have complete charge of the journal. To him I would like to have addressed all manuscripts, exchanges, etc."

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College Physicians of Philadelphia—Section on Ophthalmology.—At a meeting held December 19th, Dr. C. A. Oliver described a case of traumatic varix of the orbit in which ligation of the left common carotid was successfully performed. The varix probably had its inception when the patient was 4 years of age, by an injury to his head received by being caught between two railroad cars, and was aggravated by a blow on the left eye 5 days before being seen. There was swelling of the lids, conjunctival edema, proptosis, almost complete immobility of the globe, and engorgement of the retinal veins. A temporal bruit could be heard. Transient pressure on the left common carotid caused the eye to slowly sink into place and the venous stasis in the iris and orbit to subside. Ligation of the vessel was made by Dr. T. S. K. Morton, resulting in immediate cessation of most of the symptoms. Five months later the eye was blind from secondary glaucoma, while all the early symptoms had disappeared. Dr. de Schweinitz mentioned an analogous case of pulsating exophthalmos from varix in the cavernous sinus in which the exophthalmos and pulsation were controlled by pressure. Dr. Risley described a case with similar symptoms excepting neuritis. In his case an exploratory puncture of the orbit revealed a small orbital aneurysm.

Dr. Oliver, by the aid of 3 water-color sketches, showed three stages in the progression of choroidal atrophy after traumatic rupture. Dr. Sweet showed that degeneration of the choroid follows within a month after rupture. Dr. Randall demonstrated that the choriocapillary coat was the first of the choroidal layers to show changes.

Dr. G. C. Harlan read a paper on prolapse of the iris after extraction of simple cataract, and he believed that this accident is not as serious as many authors consider it; that small hernias should be left alone unless they interfere with the closure of the wound; that treatment for large prolapses is prompt abscission, and in a certain number of cases replacement may be successful. Dr. de Schweinitz had had three prolapses in patients who remained in the bed in which they rested during operation, and many other cases of extraction when the patient had been moved from the operating room to a differnt part of the house and had suffered no prolapse. It would seem, therefore, that some other cause besides movement or restlessness on the part of the patient, such as inaccuracy in making the section, was more to be reckoned with. Delayed union of the edges of the wound did not favors prolapse and that adhesion of the iris to the lips of the wound might be means of restoring the anterior chamber. Dr. Oliver offered the following conclusions: Hernia of the iris during operation favors prolapse; Massage of the iris through the cornea and closed lids during the operation may prevent prolapse; the prolapsed iris should be replaced when the prolapse is fresh and no danger of infection, and excised when large or there is reason to suspect conjunctival sepsis.

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That ophthalmology has not always been that proud and aristocratic science and art as which it appears to us now, is evident from a lecture delivered by Professor Schnabel, of the University of Vienna, a few months ago. This well-known ophthalmologist commenced his lecture with a retrospect of the development of his branch of medicine, to which he felt induced by the thought that the last term of study of this century had been inaugurated. He said that the first and perhaps the most important step for the developopment of ophthalmology was in the establishment of eye-clinics. Vienna was the first university where an eye-clinic was founded. At the beginning of the seventies of the last century there was in whole Austria no surgeon who was capable of performing a cataract operation. The Empress Maria Theresa felt this want most deeply. When, therefore, about this time, the Parisian surgeon, Dr. Wenzel, came to Vienna to operate for cataract, the Empress asked him to instruct two surgeons of Vienna in his art. Wenzel, indeed, showed his operation to two surgeons there, but was reticent about the most important procedures. In consequence the surgeons operated with such bad results that soon after his departure they had to stop the practice. When, some years later, Wenzel again was called to Vienna, the Empress summoned him and reproached him bitterly for his treacherous behavior. She would allow him to operate only on condition that he instructed systematically Dr. Joseph Barth, the celebrated anatomist of Vienna. Wenzel first tried to deceive even him. But Barth soon perceived that, and to obtain the desired information he promised Wenzel to instruct his son in the anatomy of the eye in return. In this manner the Frenchman was finally induced to give up his whole art and Austria obtained its first ophthalmic surgeon. After Beer then had been made professor of the newly-established eye-clinic, ophthalmology soon developed at Vienna with such rapid strides that the Vienna university became recognized as the leading school in the field of ophthalmology long before Skoda and Rokitansky made Vienna the Mecca of internal medicine. Professor Schnabel then gave the later development of ophthalmology, which was brought to full bloom by men like Arlt, Graefe, Helmholtz and Donders.—The Keystone.

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College of Physicians of Philadelphia—Section on Ophthalmology.—At a meeting held November 20th, Dr. W. E. F. Norris presented a case of chancre of the lower eyelid in a man aged 45 years. He gave an exceedingly obscure history of infection, and he had no other symptom of syphilis. The patient said that some days before the symptoms appeared he was struck in the lid of the right eye by a splinter of wood, which was removed by a fellow-workman, who was syphilitic. The symptoms differed from the typical symptoms of chancre in the marked swelling of the lids and the high degree of the chemosis and ecchymosis of the conjunctiva, and were similar to them in that the ulcer was deeply excavated, limited by indurated and steep edges, and by the presence of secondary involvement of the glands of the neck.

Dr. G. Oram Ring, exhibited a case of sarcoma of the orbit, in a boy of 10, who had received a slight blow on the orbit. The eyeball became extruded from the orbit and was enucleated by Dr. Ring. The orbit was filled with a sarcomatous mass which, after enucleation of the globe, grew with great rapidity until now it has reached enormous proportions. Dr. Ring decided that the tumor was inoperable.

Dr. C. A. Oliver reported a case of melanosarcoma of the choroid in a man 64 years old, which had its origin probably 26 years previously. There was extension of the tumor into the orbit, destruction of the orbital contents, and protrusion forward in the form of a fungus the anterior surface of which was ulcerated.

Dr. Ring described a case of chronic iridocyclitis and loss of vision from exudation into the pupil, which he ascribed to sympathetic disease.

Dr. G. E. de Schweinitz related the history of a case of gumma of the iris and ciliary body, and demonstrated the specimens from the enucleated eyeball.

Among the ocular findings of the study of 23 cases of epidemic cerebro-spinal meningitis, Dr. B. K. Chance reported (by invitation) lessening of central vision, photophobia, diplopia, ptosis and facial paralysis. The marked and characteristic changes were found in the optic nerves in which was seen early and progressive neuritis attended with hyperemia, edema, and swelling of the papillae with constriction of both arteries and veins.—The Philadelphia Medical Journal.

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**OBITUARY**—Sir James Paget, Bart., F. R. S., F. R. C. S., D. C. L., L. L. D.—The death is announced in London of Sir James Paget, in his eighty-sixth year. He was born at Great Yarmouth, January 11th, 1814. He was educated in St. Barthlomew's, became a member of the Royal College of Surgeons in 1836, and was elected fellow of the same institution in 1843. In 1875 he was president of the Royal College of surgeons, and from 1884 to 1895 was vice-chancelor of London University. He was created a baronet in August, 1871, in recognition of his many discoveries in surgery. In 1881 he was appointed a member of the royal commission to inquire into the condition of the London hospitals for smallpox and fever cases. At the jubilee, in 1882, in commemoration of the three hundredth anniversary of the founding of the University of Wurzburg, he was one of the foreign scientific celebrities who received honors.

He was also a corresponding member of the Institute of France and an honorary fellow of many universities and other institutions. For many years he had been consulting surgeon of St. Bartholomew's Hospital.

Sir James Paget was one of the most famous English surgeons of the century, and made many contributions to surgical knowledge. Among his best known literary works are the "Pathological Catalogue of the Museum of the College of Surgeons," "Report of the Results of the Use of the Microscope," published in 1842, and "Lectures on Surgical Pathology," published in 1853, 1863, and 1868. He was also an extensive contributor to the "Transactions" of the Royal Society, of which he was a fellow, and other learned institutions. Since 1863 he had been surgeon to the Prince of Wales, and since 1878 sergeant surgeon to Queen Victoria.—Medical Record.

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The following is a letter addressed to the members of the Ophthalmological Section of the American Medical Association.

MY DEAR DOCTOR.—For some years past much of the value of the contributions to the scientific session of the Section has been lost owing to the large number of papers presented, making it necessary to rush through the program and to shut off much valuable discussion. At the meeting in Columbus, the executive committee reported the following resolutions, which were unanimously adopted by the Section:

"It is the decision of the executive committee that the number of papers to be read at the meeting to be held in 1900 be limited to forty, of which fifteen are to be on invitation by the chairman, and twenty-five to be accepted from volunteers. These are to be limited to fifteen minutes each.

"Three addresses by special invitation may be obtained, at the discretion of the officers, from within or without the Association.

"Papers are to be accepted in the order of their reception and at the direction of the excutive committee.

"Abstracts of all papers must be sent to the secretary before May 1st, 1900.

"Discussions are to be limited to five minutes each, and no person shall speak more than once in the same debate.

"Due notice of this will be printed in the journal of the association, which will be considered the official notice for the volunteer papers."

Owing to the large number of ophthalmologists affiliated with the A. M. A., any and all of whom are competent to prepare papers which would be of value to the ophthalmic world, and would be gratefully received by our members, it will be necessary for those who desire to contribute volunteer papers to make arrangements with the officers *at once*, so that place may be reserved for them on the program. Positively no exceptions to the rules above adopted will be allowed, so it is earnestly requested that, if you wish to contribute to the scientific program at our next meeting, you will write immediately to the secretary, Dr. C. F. Clark, 188 East State Street, Columbus, O., stating, if possible, the title of your proposed paper. We remain, Yours very sincerely,

H. V. WÜRDEMANN, Chairman. C. F. CLARK, Secretary.

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The following circular letter has been sent to the medical profession by the President of the American Medical Association. If the physicians of the United States would generally write to their representatives in congress, much influence would be brought to bear for the good of the profession. It has been the experience of the Managing Editor, in this matter as well as others, that our representatives carefully consider our opinions and wishes, and gladly welcome enlightenment upon medical subjects.

To the Members of the Medical Profession in the United States.—The cause of humanity and of scientific progress is seriously menaced. Senator Gallinger has again introduced into Congress tho Bill for the "Further Prevention of Cruelty to Animals in the District of Columbia," which he has so strenuously and misguidedly advocated in the last two Congresses. It is Senate Bill No. 34. Twice the Committee on the District of Columbia has, also unfortunately and misguidedly, reported the bill with a favorable consideration. It is specially drawn to seem as if it were intended only in the interest of prevention of cruelty to animals, but the real object is twofold: 1, to prohibit vivisection and, 2, to aid the passage of similar bills in all the state legislatures.

It hardly needs to be pointed out that this would seriously interfere with or even absolutely stop the experimental work of the Bureau of Animal Industry and the three medical departments of the Government, the Army, the Navy, and the Marine-Hospital Service. The animals themselves might well cry out to be saved from their friends. No more humane work can be done than to discover the means of the prevention of diseases which have ravaged our flocks and herds. All those who raise or own animals, such as horses, cattle, sheep, pigs, chickens, etc., are vitally interested in the preservation of their health and the prevention of disease.

The inestimable value of these scientific researches as to the prevention and care of diseases among human beings it is superfluous to point out. Modern surgery and the antitoxin treatment of diptheria alone would justify all the vivisection ever done.

As my attention has been called officially to the introduction of the bill, I take the opportunity of appealing to the entire profession of the country to exert itself to the utmost to defeat this most cruel and inhuman effort to promote human and animal misery and death and to restrict scientific research. It is of the utmost importance that *every physician* who shall read this appeal shall *immediately* communicate especially with the senators from his state, shall also invoke the aid of the representatives from his or other districts in his state, and by vigorous personal efforts shall aid in defeating the bill.

It is especially requested also that all of the national, state and county societies, at their next meeting take action looking toward the same end. If regular meetings are not soon to be held, special meetings should be called. Correspondence is invited from all those who can give any aid.

The Committee on the District of Columbia consists of Senator James McMillan, Michigan, Chairman, and Senator J. H. Gallinger, New Hampshire; H. C. Hansborough, North Dakota; R. Redfield Proctor, Vermont; J. C. Pritchard, North Carolina; Lucien Baker, Kansas; C. P. Wetmore, Rhode Island; C. J. Faulkner, West Virginia; Thomas S. Martin, Virginia; Wm. M. Stewart, Nevada; and Richard Kenny, Delaware. Personal letters may be addressed to them or to other senators. Petitions should be addressed to the Senate of the United States.

W. W. KEEN, M. D.,
President American Medical Association.

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Examination of the eyes and ears of the school children of Milwaukee, Wisconsin, has been begun under the authority of the health department and school board, by Dr. H. V. Würdemann, with the collaboration of Drs. Nelson M. Black, Charles Zimmermann and John S. Barnes. The methods so successfully instituted by Dr. Frank Allport when a resident of Minneapolis and also partially carried out by him for the City of Chicago are being followed. In Milwaukee, however, luckily for the children as well as for the scientific aspect of the investigation, it seems that these physicians will not be hampered by local jealousies, in the health department, school board or the medical profession, as has been, unfortunately, the case in some other cities. Allport's method of investigation depends upon a very simple examination of each child by individual teachers; the number, age, sex of all the children being tabulated, but only the defectives being entered in detail. The facts to be ascertained are readily made known from the following questions:

1. Does the pupil habitually suffer from inflamed lids or eyes?
2. Does the pupil fail to read a majority of the letters in the number xx (20) line of the Snellen's Test Types, with either eye?
3. Do the eyes and head habitually grow weary and painful after study?
4. Is the pupil probably "cross-eyed?"
5. Does the pupil complain of ear-ache in either ear?
6. Does matter (pus) or a foul odor proceed from either ear?

7. Does the pupil fail to hear an ordinary, voice at twenty feet in a quiet room?
8. Does the pupil fail to hear the tick of a good sized watch at three feet with either ear in a quiet room?
9. Does the pupil fail to breathe properly through either nostril?
10. Is the pupil an habitual "mouth breather?"

If an affirmative answer be found to any one, a card of warning, not of compulsory nature, is sent to the parent, with the request to have the child examined by a reputable oculist or aurist. The parent can heed it or not, but the teacher, now cognizant of the difficulty, can do much to better the chances of the pupil. This order of the health department has been favorably received by the public and promises to afford much benefit to the children as well as to give satisfactory scientific data.

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Preliminary Program of the Section on Ophthalmology of the American Medical Association, meeting in Atlanta City, N. J., June 5-8. 1900.

### Tuesday—Afternoon Session.

Address of Chairman.

Treatment of Conical Cornea.

1. Optical Therapeutics, Swan M. Burnett, Washington.
2. Operations, Robert Sattler, Cincinnati.

Discussion opened by Herman Knapp, New York. F. C. Hotz, Chicago; Samuel D. Risley, Philadelphia (to be invited).

Volunteer papers.

### Wednesday—Morning Session.

Exhibition of Specimens and New Instruments.

1. A Double Trial Lens to Balance the Eyes in Presbyopia, Mark D. Stevenson, Akron, O.
2. Other Demonstrations.

Volunteer Papers.

### Wednesday—Afternoon Session.

The relation of Ocular Diseases and Visual Defects to Vocations.

1. What amount of Visual Defect Should Disqualify in Railroad and Steamship Service, Frank Allport, Chicago.
2. Estimation of the Amount of Injury to the Business Capacity of the Individual from Partial or Complete Loss of Vision, Adolf Alt, St. Louis.

Discussion opened by Wm. Thompson, Philadelphia; C. H. Williams, Boston.

Volunteer papers.

### Thursday—Morning Session.

Exhibition of Specimens and New Instruments.

1. Demonstration of Sections of an Unusual Intra-Ocular Growth, Wilbur P. Marple, New York.

2. Other Demonstrations and Instruments.

Volunteer papers.

### Thursday—Afternoon Session.

The Rational Use and Limitation of Therapeutic Measures Intended to Promote the Absorption of Exudates within the Eyeball.

1. Medicinal Measures, Rudolph Brunson, Hot Springs, Ark.
2. Local Therapeutics, M. Uribe Troncoso, Mexico City.
3. The Present Status and Value of Massage of the Eyeball with the Consideration What Diseases of the Eye may be Favorably Influenced by this Therapeutic Measure and What are the Best Means of its Application, Casey A. Wood, Chicago.

Discussion opened by Geo. M. Gould, Philadelphia; J. Santos Fernandez, Havana, Cuba; Robert L. Randolph, Baltimore.

Volunteer papers.

### Friday—Morning Sessson.

Exhibition of Specimens and New Instruments.

1. An Improved Lantern for testing, C. H. Williams, Boston.
2. Demonstration of a Tubercular Tumor of the Orbit, H. F. Hansell, Philadelphia.

Treatment of Immature Cataract with Special Reference to the Rate of Development and Such Measures as May Check it, G. E. deSchweinitz, Philadelphia.

Discussion opened by John E. Weeks, New York; Abner W. Calhoun, Atlanta.

### Friday—Afternoon Session.

Volunteer papers.

### Titles of Volunteer Papers Accepted to Date.

1. Secondary Operations on Capsular Membranes, Peter A. Callan, New York.
2. Lessons Learned from a First Series of 100 Cataract Extractions, F. T. Rogers, Providence.
3. Glioma of the Retina, G. A. Sulzer, Portsmouth.
4. Hemorrhagic Glaucoma, W. C. Posey, Philadelphia.
5. Will Relate the Variations in the Size of the Pupil, Lucine Howe, Buffalo.
6. Paresis of External Recti Associated with Irregular Tabes, G. Oram Ring, Philadelphia.
7. The Effects upon the Eye of Flashes of Electric Light, Dunbar Ray, Atlanta.
8. Keratitis-Bullosa with Report of a Case, E. O. Sisson, Keokuk, Iowa.
9. The Use and Abuse of Iodid of Potash in Ophthalmic Practice, A. R. Baker, Cleveland.
10. The Use of Heat as a Therapeutic Agent in Chronic Eye Affections, L. J. Lautenbach, Philadelphia.
11. Factors which Influence the Movements of the Eyeball, Edward Jackson, Denver, Col.
12. The Douche in the Treatment of Purulent Conjunctivitis, E. E. Holt, Chicago.
13. The Ocular Complications of Injuries to the Head, with Report of Two Cases, J. T. Carpenter, Philadelphia.
14. Observations on the Etiology of Scrofulous or Phlyctenular Keratitis and its Treatment by Salicylate of Sodium, H. Gradle, Chicago.

# BOOK NOTICES.

## SYSTEM OF DISEASES OF THE EYE.

NORRIS AND OLIVER, Philadelphia, Pa. (By American, British, Dutch, French, German and Spanish authors. Published by J. B. Lippincott Co., 1900. Sold by subscription only with three preceding volumes.)

Volume IV of this excellent system treats of "Anomalies of Motor Apparatus, Diseases of Cornea and Lens, Ametropia and Medical Ophthalmology." Contains 949 pages, including index, 51 full pages plates and 211 text illustrations. The paper, type, illustrations and binding cannot well be improved upon.

"Anomalies of the Motor Apparatus of the Eyes," by Edmund Landolt, of Paris, translated by C. M. Culver, of New York, is a splendid monograph, and an amplification of his well-known paper in the *Traité complete d'ophtalmologie*," consisting of 167 pages and illustrated by three full page plates and 72 text illustrations and deserves all the praise that can be given it. The words, "Finally, if these means, which we shall call pacific, are inadequate, we may resort to operative interference," show he has not the tendency to snip muscles first, foremost and all the time in treating muscular asthenopia.

"Diseases of the Cornea," by J. P. Nuel, Belgium, translated by Thomas H. Fenton, Philadelphia, goes into detail with the pathological anatomy of the conditions and the text is made much more appreciable by the splendid photographic reproduction of microscopic appearances. The constitutional treatment in diseases of this part of the ocular apparatus is particularly emphasized.

William F. Norris, of Philadelphia, in his masterly treatment of "Diseases of the Lens" leaves little to be wished for; illustrated by 28 full paged plates and numerous cuts; anomalous conditions of the lens are well described and depicted by illustrations reproduced from photographs and the pathology of cataract in all its various forms is made most readable and interesting. The operative technique and after treatment of extraction being especially dwelled upon; each step and complication that may arise in operating, is fully considered. While generally well illustrated, some of the photographic reproductions are not lucid or pertinent to the text and might as well have been left out or replaced by those of more diagramatic nature.

"Ametropia: Its Etiology, Course and Treatment," by Charles A. Oliver, Philadelphia, shows a careful study and detail knowledge of the subject and is rendered in the particularly pleasing style characteristic of the author. The subject is divided into five parts, i. e., Part I. General Considerations," including nomenclature and definitions of various forms of ametropia. Part II. Treats particularly of the etiologic features productive of the condition. Part III. "Symptoms," subjective and objective. Part IV. "Prognosis." Part V. "Treatment."

"Ocular Lesions Dependent upon Diseases in the Circulatory System," is written by O. Haab, of Zurich, and translated by William Zentmayer, of Philadelphia. It goes deeply into the subject and is rich with references.

Henry R. Swanzy, of Dublin, writes of "Eye Diseases and Eye Symptoms in their relation to Organic Diseases of the Brain and Spinal Cord" in able and scholarly manner, and makes it one of the most valuable papers in this volume. Not only is he to be congratulated on the selection of material used in the paper, but a more thorough research in the subject is not to be found at present.

"Ocular Lesions Dependent upon Disorders of the Secretory and Excretory Organs," by J. B. Lawford, London, is made additionally interesting and instructive by the reproduction of the fundus in diseased condition in the plates inserted throughout the treatise.

"Ocular Lesions in Variola, Rubeola, Morbilli, Scarlatina, Erysipelas and Diphtheria," is written by John B. Story, of Ireland, and is concise and to the point.

"Ocular Lesions of Influenza, Dysentery, Cholera, Malarial Fever, Dengue and Yellow Fever," is well treated by J. Santos Fernandez, Havana, Cuba, translated by Daniel M. Guiteras, U. S. N.

M. Parinaud, Paris, deals with "The Ocular Manifestations of Hysteria." The article is translated by Casey A. Wood, of Chicago.

Johnathan Hutchinson, Jr., of London, in his short paper on "Eye-Affections Due to Graves Disease and Herpes Zoster," does justice to the subject.

"Motor Changes in the Ocular Apparatus Associated with Functional Neuroses." Fifteen pages are devoted to this subject by Myles Standish, of Boston. The cure of epilepsy and chorea by tenotomy and the complete relief of an asthenopia arising from exophoria by clipping one internal rectus is a little beyond the amount one usually gives full credence to and reports of cases as on page 785, are hardly in keeping with the scientific articles found in this system.

Geo. E. deSchweinitz has but slightly condensed his prize essay, "The Toxic Amblyopias," and gives a splendid, lucid description with abundant illustrations.

Maximillian Saltzmann, of Vienna, devotes 17 pages to "The Entoza of the Human Eye," translated by H. V. Würdemann, of Milwaukee, Managing Editor of these ANNALS.

"Simulated Blindness" is thoroughly discussed by S. Bandry, of Lille, translated bv Frank W. Marlow, New York.

A. Gayet, of Lyons, in "Ocular Signs of Death," shows none of the ocular tests absolutely sure, but the paper is of more than passing interest. The article is translated by E. C. Ellett, of Memphis.

NELSON M. BLACK.

## REFRACTION AND HOW TO REFRACT.

THORINGTON, JAMES, A. M., M. D., Philadelphia. (Including Sections on Optics, Retinoscopy, the Fitting of Spectacles and Eyeglasses, etc. Two Hundred Illustrations, Thirteen of which are in Colors. P. Blakiston's Son & Co., Philadelphia. 1900. 8vo. 301 pages, including index. $1.50.)

This is the nearest approach within my knowledge to the teachings of the elementary optics in its purely practical bearing upon the relation of refraction to the fitting of eyeglasses and spectacles If it is possible, Thorington has done it, but my own limited experience convinces me that no subject in medicine demands so solid a ground work of pure physics as do the phenomena of light. The book has twelve chapters—Optics; the Eye (including cardinal points, visual angles, acuteness of vision, size of retinal image, accommodation, far and near points and their determination, convergence and angles alpha and gamma); Ophthalmoscope; Emmetropia, etc.; Astigmatism; Retinoscopy; Muscles; Cycloplegia (asthenopia and examination of the eyes); How to Refract; Applied Refraction; Presbyopia (aphakia, anisometropia, spectacles); Lenses and Eyeglass Frames, with rules for measuring and fitting.

A safer guide could not be put into the hands of the student reader, for the above list includes most of the matter outside the category of pure disease, and discusses problems that are by no means exhaustively attacked in the ordinary textbook. The very fact that there are but few errors indicates the care with which the author has worked. On page 76, he reverses the words *numerator* and *denominator*, so that, by his rule, a lowered vision would read 24/6. On page 287, should read Figs. 188 and 189.

I am sorry that the modern ideas of the Philadelphia school do not carry far enough to demand the metric system of prescription writing, instead of the obsolete grains and ounces. Surely he who clips ophthalmoscope to *scope*, and drops all *al* endings after *ic* words, should not be content short of a decimal notation. And the reiterated phase "*How to Refract*" reminds one of the sign in the shop window *Optician and Refractionist.* The lens refracts, not the ophthalmologist.

Small defects, however, only magnify great virtues, and Thorington's clear and alert style is impressed on every line. As might be expected, the preferred method of estimating the refractive condition is that by Retinoscopy, although he is by no means dogmatic about it. In making the diagnosis of either hyperopia or myopia, the author fails to mention—among objective methods—that of the vessel test, so clearly analyzed in Morton's little book. To my mind, it is one of the easiest acquired and quickest practiced in the dark room, of any test, and though of course not leading to accurate resultes, is nevertheless a trustworthy guide.

The practitioner will find the last five chapters of the greatest value. It is all applicable to daily use, and until one has learned one's lesson by repeated hard knocks (sometimes from a clever optician, too) these chapters should be within reach of one's desk, for answer to the numerous questions that arise while at work.

We need more such books in medicine. The sooner we generally acknowledge the art or arts in medicine, the quicker will our profession emerge from the laboratoay and be respected by our commercial confreres. A. B. HALE.

This book, which may be said to present the Gospel of refraction as it is in Philadelphia, is practically the handing down of the truth as it is in Donders, slightly adapted to the needs of the ophthalmic student of to-day. The whole build of the book shows how the author has striven to bring the complex subject of refraction within the grasp of the beginner in ophthalmic work—a task in which the author has succeeded almost as completely as in his well known "Retinoscopy." Dr. Thorington has there shown a positive genius in putting before the beginner the needed facts in such consecutive and easily understandable array as goes straight to the heart of his readers. The same skillful handling of basic facts for purposes of instruction characterize this new work from his pen. There is no intention on the part of the author that this manual shall supplant such classics as Donders or Landolt; the intent is, rather, that because of it the student will feel impelled toward profound study of these two masters. Seeing which things, it is easy to excuse such seeming omissions and generality of statement as invariably go hand in hand with condensation. It is simply unavoidable. If criticism there must be, it is only to suggest that more insistence might have been laid on the tenacity of the relation between accommodation and convergence; likewise the farreaching influence of eyestrain on mental development and physical comfort.

Moreover, not all teachers will say "Amen" to all that is said about homatropin or scopolamin—but these are largely matters of personal opinion. We repeat what we have already said—it is essentially a student's book and within such contracted limits no author can give the widest expression to his views. It is a sterling book, and will surely "accomplish that whereunto it was sent."

WENDELL REBER.

## SURGICAL ANATOMY.

**DEAVER, JOHN B., M. D.** (A Treatise on Human Anatomy in its Application to the Practice of Madicine and Surgery. In three volumes. Illustrated by about 400 plates, nearly all drawn for this work from original dissections. Royal square octavo. P. Blakiston's Son & Company, Philadelphia. 1899. Cloth, $21.00.)

Volume I. There is a widespread criticism against specialism that as a rule it tends to enlarge its own importance to the detriment of the principles of the art it professes to practice. It is complained not only that the specialist in medicine belittles the general knowledge that is the only gateway to his own field, or ignores the interconnection between pathological processes elsewhere and his own particular organ and function, but that he often is ignorant of the advances made in the science and art of his profession, and sometimes misapplies what knowledge he has, in his endeavor to magnify his own eminence. Without attempting to contravert such criticism, it must be acknowledged by all that he is the true specialist only, who knows all things well, but one thing most thoroughly.

In my own effort to avoid the narrowness that always endangers too close adherence to a beaten path, I feel there is no more broadening influence on the physician than the study of anatomy as a general science, or preferably in its more specific form—applied anatomy. When therefore I was asked to review the first volume of the magnificient work of Deaver, my impression was that its interest to us lay not alone in its references to the eye or ear, but quite as much in the power it would have to remind us, if there were need, that we are surgeons before we are ophthalmologists.

The book before me is the first volume of a promised three, dealing with human anatomy in its application to medicine and surgery. Its subjects are the *upper extremity; back of the neck; shoulder; trunk; cranium; scalp and face.* Volume II (notice of which I hope to give when the book appears) will contain the neck; mouth; pharnyx; larynx; nose; orbit; eyeball; organ of hearing; brain female perineum; male perineum. Volume III, abdominal wall —abdominal cavity; pelvic cavity; chest; lower extremity.

The book is applied anatomy in the fullest sense of the term. To me it appears two complete books, one within the other, a treatise on the surgical and medical aspects of the human body, bound about, but not written around, an atlas picturing the living tissues —muscles, nerves, bloodvessels—as they lie related to themselves. The text and the plates; these two comprise the volume. In fact, I was inclined at first to resent the seeming disassociation of text from plate, or to prefer the schoolboy habit of looking first at the picture and then of reading what it was all about; a method that merely satifies curiosity. The author has therefore chosen wisely to force the student to digest the matter mentally, and then to refresh his memory by the pages that give delight to the eye.

There are 600 pages of matter and 32 of index; of the matter, each plate has both its own number and its plate number, so that references can be made in two ways. The first 450 pages including CXIX plates (some duplicated) are devoted to the upper extremity, back, shoulder and trunk. In discussing the arm the author introduces articles on dislocations, excisions, fractures, amputations, ligations and nerve stretching. All this not only embraces the mere anatomical conditions, but also applies surgical technique and method to each operation on the part of the human body. The joints and ligaments are elaborately described, and the disturbances implied in dislocation, with the mechanical effect of muscles and ligaments in such abnormal relations, are explained systematically and in detail. This refers to the plates as well as to the text: plate LXX (page 272) for example, is rather schematic of the humerous fractured through the *surgical neck or above insertion of* *deltoid*, and the action of each muscle is indicated by arrows; the reason, therefore, for certain surgical procedures is plainly given.

Amputations, too, are described and illustrated in the same way but to me the text seems not so clear. I feel confident, also, that it would be an addition to the book, a decided aid to the student's interpretation of the text, if, in this section, there were introduced a plate picturing the various methods of amputation. The circular method, flap method, Teale's method, would be plain in an instant. After all. the illustration as a means of conveying an idea, is not to be dispised.

In a publication devoted to a special branch of medicine, it is perhaps unnecessary to remark further upon the general part of surgical anatomy. The last 150 pages, however, touch upon the very area in which we, as ophthalmic surgeons, assume a technical interest, and it is here therefore that we would most naturally study the work of Deaver in greater detail.

Beginning at page 451, he describes the *Surface Anatomy of the Cranium*, following this by the *Surface Anatomy of the Face; the Scalp; the Face (pterygo-maxillary region;)* and ending the book with the *Membranes and Vessels of the Brain*, including the *Intracranial Course and Mode of Exit of the Cranial Nerves* Within these pages are 31 plates (CXX to CLI, some duplicated), illustrating such phases as *Cranial Landmarks*, *Arteries of Scalp and Face*, *Nerves of Scalp and Facial Nerves*, *Muscles of Scalp and Face*, *Tensor Tarsi and Corrugator Supercilii Muscles*, *Palpebral Fissure of Eyeballs—Eyelids Everted*, *Lacrimal Apparatus and Meibomian Glands*. To the ear are given plates on the Pinna, intrinsic muscles of the Pinna, and there are three plates illustrating the sinuses, while several others deal with the brain and cranial nerves within the skull.

It would be rediculous to try to criticise such a book, unless criticism in that case means only the highest and sincerest praise. There is between its covers everything that the surgeon-anatomist needs, and much that the mere worker in the dead-house can never know. The former, for instance, must be acquainted with the fact "the scalp is less elastic than the skin of the other regions of the body and therefore tears readily in stitching." In the same way the relation of the superior longitudinal sinus to septic inflammation of the scalp, is traced on page 481, and the plates illustrating this on pages 569, 578 and 579 are beautifully clear. Such plates as CXXXIII (page 505) with the arteries, nerves and muscles of scalp and face, are pictures that the ophthalmic surgeon should carry in his brain with the exactness of the camera, and the study of page 496 will clarify to the student many a small point that was before hazy in detail.

Perhaps ophthalmologists would prefer the use of the term *tarsal plate* to that of *tarsal cartilage;* and that more emphasis were laid upon the distinction between the *tendo oculi* and *tensor tarsi*, because their intimate relation to the lacrymal sac is to us of the greatest importance. It is probably a mere slip that the facial nerve is classed as sensory—supplying the parotid gland. I wish, too, that the author would avoid the indiscriminate use of the metric and old English scales; either one alone should be adopted, or if both are given, the less preferred should always be bracketed behind the other.

It must be a satisfaction to have produced such a book as this. I trust the author is, and he has a right to be, content. My own admiration is expressed most succintly by the eagerness with which I await the other volumes. The publishers, too, deserve the highest praise. It is rare that American medical books show the artistic as of equal importance to the scientific, but there is in this such a beauty of finish, such a depth and perspective about the plates, that it ranks *facile princeps* as a treasure for both students and literature.

A. B. HALE.

## HANDBOOK OF OPTICS.

SUTER, W. N., B. A., M. D. (Professor of Ophthalmology at the National University, Washington, D. C. The Macmillan Co., New York, 1899. 209 pages, copiously illustrated. $1.00.)

That a thorough knowledge of optics is the best foundation for the proud edifice of ophthalmology there can be no doubt. The usual textbooks of physical optics always contain a good many things that do not directly concern the beginner in ophthalmology, and on the other hand they frequently omit points about which he desires to obtain full information. A book, therefore, in which there is presented that part of the optics which pertains directly to ophthalmology must be welcome to the oculist. Such is the character of the book that has been written by Dr. Suter who is to be congratulated on his work. Concerning his intentions the author says in the preface: "Simplicity has been sought so far as this is not incompatible with thoroughness; for whosoever would become versed in ophthalmology as a *science* must, in the beginning, make the mental effort necessary to acquire a clear understanding of the refraction of light through a compound optical system, such as the eye." The author has succeeded phenomenally in setting forth clearly some of the highest problems of physiologic optics, and what is more to the point, any earnest student will be able to follow him because simple algebra and elementary geometry alone are made use of. After a few introductory remarks concerning the wave theory of light, the author deals with refraction as occurring at plane surfaces and through prisms giving a simple but forceful demonstration of the minimum of deviation. We miss in this chapter a definition of the central of Dennett, the prism-diopter of Prentice, and the metre-angle of Nagel which would perhaps be more satisfactory to the student than reference to the original papers. The second and third chapters deal with refraction at spherical surfaces and through lenses thus leading up to the most important point—the eye as an optical system. This latter subject is not treated in the elaborate manner of Helmholtz, but none the less in a thorough, although rather slower, method which, however, being less abstract will be of greater benefit to the average student. His calculation of the cardinal points is from the constants found by Helmholtz. The effect of lenses on these cardinal points in emmetropia and ametropia, as well as their influence upon the size of the retinal images, is fully explained in chapters 4, 5 and 6. In this connection the author calls attention to an inaccurate statement often made with regard to the effect of the removal of a reading glass from the eye of the presbyopic hypermetrope. It is usually stated that presbyopes increase the power of their glasses by moving them toward the tip of the nose; but the author proves the following rule (p. 107): "If the distance between object and lens is less than twice the focal length of the lens, the power of the lens is diminished by moving it away from the eye and toward the object; if, on the other hand, the distance between object and lens is more than twice the focal length of the lens, the power of the latter is increased by moving it away from the eye." But as the reading distance (13 inches) is ordinarily less than twice the focal length of the lens worn, the power of such a glass is weakened by moving it from the eye. This refers to all glasses weaker than 6.00 D. provided the print is kept at the same distance and the hypermetropic patient has no accommodation.

The subject of cylindrical lenses, their torsional properties, and the resultants of their various combinations embraces about 40 pages. The author shows very clearly the sphero-cylindric equivalent of two cylinders placed with their principal axes oblique to each other. As is well known, this has been done before by Donders, Jackson, Hay, Prentice, Wilson and myself, but the author's apology for adding another solution to those already published is that "in all these solutions the process of eliminating the special point at which the ray meets the lens is unnecessarily tedious." He objects to the demonstrations of Donders and to my own proof because they are correct only for certain points on the cylinder. This objection must hold and I admit that Donders' and my own assumption in speaking of the refractive value of a cylinder, C, in a median, X, and in expressing it by C $\sin^2$ X is not justified by our knowledge that a ray of light is refracted by a cylinder only in a plane at right angles to its axis. I wrote my paper in 1893 and gladly use this occasion to admit the inferiority of my demonstration and that of Donders. The same unwarrantable assumption, however, has been made again by Dr. Harold Wilson in Knapp's Archive's for 1898 (Vol. 28).

The subject of oblique refraction through lenses is touched upon rather lighty in chapter XI, and the effect of prisms upon retinal images considered in the following one. The last 20 pages of the book are devoted to the phenomena of the reflection of light, and the optical principles involved in ophthalmometry, ophthalmoscopy and skiascopy. These important subjects, it seems to me, ought to have been treated more fully, especially skiascopy which, is dismissed in two pages. This is the more to be regretted because, though we have many books on the practical aspects of skiascopy, we find only scanty information and explanation of the finer optical details at work. It is to be hoped that in future editions the author will give fuller details as to this important subject, and that it will be in the same lucid style in which the whole of the present volume is written. The excellent typography, illustration and proof reading of the volume together with its moderate price and intrinsic worth will ensure it a second edition. WEILAND.

This little book of over two hundred pages discusses the portions of geometrical optics of especial interest to the student and practitioner of ophthalmology. Its demonstrations can be followed throughout by one who has only a working mastery of simple algebraic equations; and clear conceptions of elementary geometrical relations. On this account, and because of its clear direct style and notable freedom from errors, it is a welcome addition to ophthalmic literature.

It is gratifying to note that justice is here done to the numerous valuable contributions to this subject which have been made by American workers. Full references are given to the work of Dennett, Green, Day, Knapp, Koller, Lippincott, Wadsworth, Weiland, and others, who have discussed the optical problems having direct practical bearing on ophthalmology.

We heartily commend the book to all workers in ophthalmology who desire to extend their knowledge of optics beyond the mere acquaintance with a few rules and bald statements. These may content the unambitious tradesman, but form a poor mental furnishing for a member of a liberal profession. EDWARD JACKSON.

## ON THE PREVENTION OF EYE ACCIDENTS OCCURRING IN TRADES

SNELL, SIMEON, F. R. C. S., Edin. (Ophthalmic Surgeon to the Royal Infirmary, Sheffield; Professor of Ophthalmology, University College, Sheffield. John Bale, Sons & Danielsson, London, 1899. 12 mo., pp. 38. Illustrated. Price, one shilling.

This booklet comprises the address delivered at the opening of the Section of Ophthalmology, at the annual meeting of the British Medical Association, at Portsmouth, in August, 1899; it deals with an exceedingly important subject. The author has had abundant opportunity for observing eye accidents, since his professional life has been spent in a populous district well known for its extensive iron and steel works, its cutlery and its large coal fields. The consideration of the subject is limited to the eye accidents which occur in the pursuit of the industries just mentioned. Figures are given which emphasize the frequency of injuries to the eyes under these circumstances; in the ophthalmic wards of the Royal Sheffield Infirmary, 30 per cent. of male patients were admitted with such injuries. Mr. Snell describes his visits to iron and steel works and illustrates by words and pictures the employees at their trades. He gives examples of the serious results of ocular injuries by chips of iron, steel and stone and calls attention to the well-known fact that the majority of such accidents could be prevented by the exercise of care and the employment of suitable protectors. He recommends large glasses made of plain glass surrounded by gauze for grinders, and an aluminum wire eye shield for those workmen who are exposed to the danger of injury from iron and steel splinters and molten metal. No mention is made of mica protectors which are admirable because they are cheap, transparent, light and non-heating. The pamphlet ought to accomplish much good in a field in which there is great opportunity for reduction in the number of eyes seriously injures or lost, and in which great carelessness is habitually displayed. An abstract of the address appears in the American and English Abstract Department of this number of the ANNALS. C. H. M.

### A MANUAL OF THE DIAGNOSIS AND TREATMENT OF THE DISEASES OF THE EYE.

JACKSON, EDWARD, Denver, Colorado. (Emeritus Professor of Diseases of the Eye in the Philadelphia Polyclinic; Formerly Chairman of Section on Ophthalmology of the American Medical Association; Member of the Americam Ophthalmological Society; Fellow and Ex-President of the American Academy of Medicine. 178 Illustrations and 2 Colored Plates, 604 pages. W. B. Saunders, Philadelphia. Price, $2.50.)

A number of times a year the editorial department of the ANNALS has to chronicle the appearance of a new manual or text-book embracing the whole field of diagnosis and treatment of diseases of the eye "intended to meet the needs of the general practitioner of medicine and beginner in ophthalmology." Since the appearance of deSchweinitz's and Fuchs' text-books, there has been no book produced, outside of the more exhaustive treatises and systems, that fulfilled the promises made by the author in his preface. It is, therefore, with pleasure that the editor proclaims in these pages the publication of a text-book that is really compact and complete as well as thoroughly up to date. Jackson's manual will, no doubt, be received by the student and by the profession with the success that it deserves.

It gives the place of first importance to the recognition and management of conditions likely to be presented early in practice, rather than to rare diseases and difficult operations. The contents carry an appearance of a carefully conceived plan. It is not a series of chapters on diseases, thrown together at haphazard, but is a thorough treatise.

Chapter I treats of the study of the case, examination of the patient, case records, etc., and is a much needed innovation, as in the beginning the student is taught to acquire a system of routine examination. I have no criticism to make of the contents, nothing but praise to bestow for the pleasure which its perusal has given me.

A bibliography of the better known recent writings upon the subjects treated is appended to each chapter. One of the most satisfactory parts of the book is its very complete index, there being 20 pages of index to 584 of contents. The book is well illustrated, largely with drawings made by the author. A few that have been inserted from other works or publications are not quite as satisfactory, more especially the two colored plates, but these are details which may be readily remedied in the next edition, which the editor believes will speedily follow the first. The very moderate price for which it is issued will be a material aid for its sale.

H. V. WÜRDEMANN.

### A TREATISE ON THE SHADOW TEST

In Its Practical Application to the Work of Refraction with an Explanation in Detail of the Optical Principles on which the Science is Based. (With 69 Illustrations and 4 plates, 221 pages. The Keystone, the Organ of the Jewelry and Optical Trades, 19 and Brown Streets, Philadelphia, Pa., U. S. A., 1899.)

When I first took up this book for review, I was struck with its pretensions and without careful study would. perhaps, be inclined to give a more favorable review than I do. As is advisable with books for which more or less adverse criticism is to be given, I have studied its pages with a view of pointing out its merits as well as its defects.

The typography and illustrations, of which there are 67, especially the photo-engravings showing skiascopic methods and appearances are good and well conceived. Its 221 pages of type, however, might have been condensed into one-half the space and given the reader a much clearer understanding of the meaning intended by the authors. It is voluminous but not luminous; an attempt at a popular style of writing involved in a mass of more or less scientific verbiage. Grammatical errors are frequently seen. The subjunctive mood is conspicuous by its absence, and punctuation is peculiar. The non-scientific acquirements of the authors are evident from the character of the language:

"Before proceeding further it seems necessary to make a little excursion into the field of general optics,, and to prepare the reader to understand the language it will be necessary to employ in the succeeding chapters of this book, for it will be necessary to use terms not at present in general optical text-books and writings. This new optical language grows out of the analysis of the force with which the optics deal—the force of light. We will start with the pencil of light. Most opticians would at once consider that they comprehended fully what a pencil of light is, and undoubtedly they do, but an analysis of this primary factor in all optical phenomena will show that there is a chance to get a better idea of something we are in the habit of considering every day. A pencil of light is composite. Of what is it composed? We do not refer now to its chromatic elements but to its simple optical elements. Probably two-thirds of all the opticians would say that a pencil of light is, as some writers express it, a 'bundle of rays.'

"The principal element of optical importance in the waves is their degree of curvature. The degree of curvature is greatest at and near the point of starting or center of curvature. The curvature of the waves decreases with their distance from this center of curvature, and it is with respect to curvature that a notation or nomenclature is of optical value. The author has improvised such a notation by designating the curvature of a wave one meter from its center of curvature, as one curvometer, or 1 Cm. The curvature of a wave $^{1}/_{2}$ meter from its center is then 2 Cm., and 2 meters from its center of curvature is $^{1}/_{2}$ Cm., etc."

The substitution of "concave" and "convex" waves for "convergent" and "divergent;" the continual reiteration of "incident pencils," "emergent pencils," etc., and other terms not at present in current use in scientific optics, only muddles the meaning of the author. The formulas, etc., coming under the head of general optic principles and the diagrams seem satisfactory.

So much for the preparatory portion of the book, of which there are 109 pages. The remaining parts, which deal with the application of the test, although tainted by a mixture of popular and pseudo-scientific language are plainer and of considerable value. The methods of examination, of application, and the appearances produced in the test, are shown in a satisfactory manner, so that an expert will gain by following some of the suggestions therein contained. I quote the following as a sample of clear language which has evidently been written by another author than the one who was responsible for "General optical principles."

"Without using a mydriatic the operator must be watchful of the observed eye's accommodation, to see that it does not come into play and give him erroneous data. It is the eyes static refraction that is sought to be obtained, and the use of the accommodation is suspected, the patient should be relieved for a moment by turning the light upon the distant test cards and requiring him to converge and accommodate for 20 feet or more. The acts of convergence and accommodation are so associated that to do one is usually to do the other, and to relax one is to relax the other. The only near object the patient is likely to fix is the observer or the virtual image, so-called, in the mirror, really to adapt themselves to the pencils from the light that are reflected by the mirror. With children whose accommodation is so very active, and who cannot be easily made to fix a distant object when near and brighter things may be seen, this matter may be somewhat perplexing. But the photographer has quite as hard a task when they sit for a picture. If the use of mydriatics is ever excusable it is the case of examining children's eyes, especially by skiascopy. But children under six or eight are seldom examined, and they are not difficult to manage if the operator is ingenious, while little folks of ten or twelve are often quite as tractable as older persons, and can be made to relax the accommodation and converge with little trouble."

This book is thus, qualifiedly, recommended by the editor for the use of practitioners who have become more or less expert in the shadow test, but not for beginners as they, he fears, would become hopelessly confused by perusal of its contents.

H. V. WÜRDEMANN.

## SECTIONS OF THE HUMAN EYE.

**SALZMANN, M.,** Vienna. ("Durchschnitt durch das menschliche Auge." Augenärztliche Unterrichtstafeln für den akademischen und Selbst-Unterricht herausgegeben von Prof. S. H. Magnus. Heft XVIII, published by J. U. Kern, Breslau, 1899. Price 8 marks.)

The editor has had occasion a number of times, to most favorably commend the series of ophthalmic lecture charts to all teachers of ophthalmology. These diagrams are very valuable for the instruction of students in classes and the accompanying texts, are of much help to the teacher in preparation of his lectures.

The two charts are drawn to scale from anatomic preparations, one is a schematic horizontal section of the normal adult eye enlarged 30 diameters, the other a section of the angle of the iris and surrounding parts enlarged 150 times. There are 16 pp. of accompanying text.

H. V. WÜRDEMANN.

THE ANNALS
OF
OPHTHALMOLOGY.

VOL. IX. APRIL, 1900. No. 2.

# THE OCULAR FINDINGS IN THE STUDY OF TWENTY-THREE CASES OF EPIDEMIC CEREBRO-SPINAL MENINGITIS*.

BY BURTON K. CHANCE, M. D.

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In the early months of the present year, 1899, there occurred in this city, chiefly confined to the north-eastern part, an outbreak of epidemic cerebro-spinal meningitis. Although the disease was promptly recognized, out of the two hundred and thirty-nine cases reported at the Bureau of Health up to September first, thirty-nine were fatal. By the kind invitation of Dr. William M. Welch, I was enabled to study the ocular lesions manifested in those patients suffering from this disease that were admitted to the Municipal Hospital of this city; and it is with Dr. Welch's permission that I present this report.

Out of thirty-seven, the total number of patients under treatment up to the first of September. I made extended and repeated examinations upon twenty-two. The remaining fifteen I failed to see, either because some of this number were admitted prior to my examinations, or that others died in the intervals between my visits; these latter cases presented no serious demonstrable ocular changes, they are therefore simply alluded to without the details of the histories being given. Although the types of disease manifested in those under observation were varied, the general clinical symptoms were sufficiently characteristic to class them as true types of cerebro-spinal meningitis.

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*Read before the Section on Opthalmology of the College of Physicians of Philadelphia, 21st November, 1899.

The patients were confined in a frame building formerly used as a church; as there were no conveniences for ophthalmoscopic examinations I visited the Hospital in the daytime and at night. For the many privileges enjoyed in the wards throughout these examinations I am indebted to the courtesy of Dr. Richard Reeser, one of the resident physicians at the Hospital.

The following cases came under my observation: in addition to the ocular symptoms I have seen fit to mention some of the most prominent clinical features in each case.

1. J. W., nine years old. Examination made in fifth week of disease. Itching of lids, photophobia. Central visual acuity markedly reduced, child too weak for accurate testing; visual fields contracted, color-sense good. Slight convergence of both eyes. Viscid mucoid discharge. Pupils 9 mm., iridic reaction, slight convergence. Media clear, right disk swollen, +3, edges blurred edematous and opaque. Diffuse edema of retina. Left disk +5, fundus paler than right. No hemorrhages; the arteries were irregularily filled and much contracted, the veins tortuous and distended. Temperature 104°—96°, pulse 140—78; herpetic eruptions marked emaciation. Symptoms as of general tuberculosis; death after ten weeks. Lumbar puncture ineffectual.

2. E. D., seventeen years old, Examined in fourth week. Convalescent. $V = {}^{5}/_{5}$. Pupils equal, iridic reactions prompt. Disks hyperemic, central lymph-sheaths swollen. Temperature 102°—98°, in ten days; pulse 120—70. Recovery rapid.

3. I. B., four and a half years old. Examined in third week. .Photophobia. Pupils, right 5.5 mm., left 3 mm., iridic reaction prompt. At about one disk's diameter from the disks the lymph-sheaths were swollen and opaque. Temperature 104°—98°, pulse 130—90. Retraction of head with pain, exaggerated reflexes, priapism.

4. K. B., twenty-three years old. Examined in first week. Deep pains in left eye. $V = {}^{2}/_{60}$ Sn. t. 0.5, 25—40 cm. Left side facial paralysis with complete ptosis, no

paresis of ocular muscles. Catarrh of left eye. Pupils 3.5 mm., iridic reaction prompt. Media clear, slight H., no chotio-retinal changes. Excessively irritable temper. Temperature 105°—98°, pulse 130—60. Death several weeks after discharge from Hospital—cause given 'heart failure.'

5. F. C., nineteen years old. Examined in third week. Photophobia, itching of lids. V=$^5/_5$ Sn. t. 0.5, 10—50 cm. Glairy discharge. No extraocular muscle paresis. Pupils 4×5 mm., iridic reaction prompt. Marked hyperemia of fundus. Temperature 102°—98°, pulse 90—72. Annoying singultus for ten days.

6. L. R., 20 years old. Examined during the first ten days after onset of disease. On admission, injection of conjunctiva, pupils widely dilated. V=$^5/_5$, Sn. t. 0.5, 25—40 cm. No contraction of field, color-sense good. No paresis of extraocular muscles. Pupils, right 3.5 mm., left 5 mm., iridic reaction prompt. Media clear. No gross chorio-retinal changes, decided hyperemia of fundus and swelling of lymph-sheaths. Temperature 104°—98°, pulse 120—80. Convalescence prompt in ten days.

7. M. G., two and a half years old. Examination during first week of disease. Marked persistent photophobia. Convergence of both eyes. Pupils contracted preventing view of fundus. Temperature 105°—97°, pulse 150—94. Complete opisthotonos, the occiput rests easily in hollow of feet, and by gentle manipulation the occiput can be made to touch the buttocks. Disphagia interfered greatly with the nursing of this child. Prompt recovery followed. I have seen the child running about the streets near her home.

8. A. G., eleven years old, sister of No. 7. Examined on the eleventh day of disease. Profound stupor. Pupils 2.5 mm. Iridic reaction prompt; no view of fundus obtained during first examination. Later, when stupor had passed away it was found that a marked hyperemia of disk and fundus was present. Temperature 106°—98°, markedly irregular for four weeks, though continued hyperpyrexia; pulse 156—80, intermittent in character. Stupor lasted many days, in which period vesical and rectal incontinence existed. Convalescence slow. Widal reaction negative.

9. A. F., middle aged German woman. Examined in first week of disease. No marked stupor. Intense photophobia, left sided facial paralysis, no affection of the extraocular muscles, marked catarrhal conjunctivitis. Pupils 2 mm., iridic reaction prompt. No view of fundus obtained. Temperature 99°—105°, pulse 72—150. Death in tenth day of disease.

10. M. F., thirty-eight years old, mother of No. 11 and 12, and another who died before these examinations were begun. Examination in second week of the disease, Pupils, right 2 mm., left 3 mm. Fundus congested, no gross changes noted. The early days of the disease were marked by unconsciousness, rigidity with hyperesthesia. Temperature 103°—97°, pulse 120—70. During convalescence there was swelling of the left hand and forearm and of the left foot, this member showed later a decided impairment of motion.

11. L. F., ten years old. Examined in first week of disease. Child was stuporous, the head markedly retracted. Pupils, right 4 mm., left 3 mm., later equal complete mydriasis. Iridic reaction good. Disks hyperemic but not prominent when first seen; later there was decided swelling with projection. Throughout the remaining course of the disease the optic disks were pallid. Temperature 105°—98°, pulse 170—88. Death on the twenty-first day. In the latter days the stupor gave place to wild delirium.

12. L. F., aged eight years, seen in second week of disease. Pupils, right 2 mm., left 2.5 mm. Iridic reaction prompt. No changes were noted in the fundus. The course of the disease in this child was mild and presented no symptoms of interest.

13. B. G., aged twelve years. Examined in the second week. Right pupil 2 mm., left 4 mm. Disks hyperemic and swollen. Frequent epistaxis. Temperature 102°—98°, pulse 130—84.

14. L. G., aged ten years, brother of No. 13. At the first examination on the eight day there was marked photophobia, delirium, retraction of head; pupils equal pin-point contraction; no reaction of iris obtained. Fundus not studied. Later, in the second week, paralysis of left face and arm took place with wide immobile left pupil. No

fundus changes noted. Lumbar puncture produced 5 cc., of light turbid fluid.

15. E. H., aged six years. Examination in first week showed injection of conjunctiva, especially at nasal angles, with increased muco-purulent discharge. Pupils equal 4 mm., iris prompt to stimuli. No fundus-changes noted. Otitis media of right side developed, and delirium persisted for several days. Temperature 102°—97°, pulse 120—98. Considerable retraction of head. Hemorrhagic eruptions spread in groups over the body.

16. I. D., aged eight months, When seen on eighth day there was photophobia and dilated pupils, the iris responding to light-stimulus. The child was too restless for satisfactory examination, yet no gross lesions of the fundus were demonstrable. Profound systemic infection, temperature 105°—98°, pulse 120—160. The hands and feet were swollen; muscles rigid, painful and hyperesthetic. A discrete eruption remained for several days. Death at the end of the fourth week.

17. E. H., aged thirty-seven years, mother of No. 15. Seen at eighth day. Pupils equal 4 mm. No fundus changes. Temperature 104°—97°, pulse 120—88. Retraction marked, and delirium. Albuminuria and pleuritis. Widal reaction negative. Convalescence protracted.

18. R. W., aged thirteen years. Examined in the first week of the disease. Profuse lacrymation and injection at nasal angles. Contracted pupils, yet iris reacted promptly to light. No fundus-changes noted. Temperature 105°—98°, pulse 90—168. Suppression of urine, dysphagia, delirium and convulsions. Rapid emaciation, profuse eruptions, lumbar puncture. Death on thirteenth day.

19. S. F., aged twenty years. One of three in the household stricken with the disease. One week before admission noticed that the sight of right eye was defective, blurring of accomodation and annoying phoses. On examination on third day there was marked photophobia. Pupils contracted, feeble reaction of iris. Retina decidedly congested. Temperature 97°—98°, pulse 78. Right sided deafness and anesthesia of right half of face.

20. J. M., seven years old. One of five infected, two

of whom died at home; of the three admitted to the hospital two died. Examined on the second day. Pupils small, iris reacted to light. No fundus-changes noted. Marked general symptoms followed by rapid convalescence. Temperature 104°—97°. Detained in Hospital owing to convalescence of remaining brother. After a period of quiet this child was suddenly seized with convulsions and a rapid return of the general symptoms. In a few hours death took place on the sixty-sixth day from the original infection.

21. S. M., aged eleven months, brother of No. 20. Examined in the hour of admission after one day's illness. Pupils small, iris prompt to reactions. The child cried incessantly, forbidding any extended examination of fundus. Temperature 103°—97°, Pulse 130—96. Frequent emesis, body rigid, upon which was well marked eruption. Repeated convulsions and death in the thirteenth day.

22. M. H., aged fourteen years. Severe headaches and spinal pains before admission. Complained of diplopia. On examination on the tenth day there was no squinting; pupils equal 3.5 mm., iris reaction prompt. No fundus-changes noted. Death on the seventeenth day after a continuous hyperpyrexia; pulse 130. Lumbar puncture yielded 16 cc. of clear watery fluid. Widal reaction negative.

23. In the case of A. S., aged twenty-seven admitted in the past 10 days, I found on examination on the seventh day of the disease (11-16-1899) greatly increased conjunctival discharge with matting of lashes, injection of bulbar conjunctiva at nasal sides. Cornea undisturbed. Pupils equal 5.5 mm., iridic reaction prompt. The right disk was quite pallid while the left was hyperemic, the lymph-sheaths swollen, the veins distended and the arteries contracted. The eyes were myopic 3D. At a later examination, the left disk was seen to be edematous, the edges being quite blurred. At this time the pupils were contracted to 3 mm. each.

The greater number of the cases were studied during the second or third week of the disease. As a rule the general symptoms were of mild severity, according to the classical descriptions, with which I was familiar. Several of the patients were in a stuporous condition, while other were excessively irritable and most unwilling to submit to my examinations; one baby cried incessantly, another was in a condition of complete opisthotonos, its state of rest being with the occiput supported in the hollow of the feet—by a slight effort the head could be made to touch the buttocks. It, therefore required much patience to make ophthalmoscopic examinations satisfactorily.

Among the subjective ocular symptoms noted early in the course of the disease were lessening of visual power, photophobia, burning and itching of the lids, and an increased conjunctival discharge. In one case there was an annoying diplopia; in another there was complete ptosis accompanying a left-sided facial paralysis and in whom there had been marked pains in the left eye for several days before admission to the Hospital.

Certain of the patients were able to respond to several visual tests, with the following results: In a boy aged nine years, with marked choked disk, there was a visual acuity of $^3/_{100}$, acute central color vision at four meters; a rough perimeter testing showed greatly contracted peripheral vision. The little fellow was extremely intelligent, yet he was too weak for any acurate estimation of the power of accommodation. In the woman with ptosis there was a visual acuity of $^2/_{60}$, Sn. type D. O. 6, 25 to 40 cm.; colors readily recognized and form fields preserved. In three other patients there was in each a visual acuity of $^5/_5$, notwithstanding the marked hyperemia of the fundus.

Slight conjunctival disturbances, localized chiefly to the nasal side were present in seven cases; the discharges were of a thickened mucoid material. In no case was there infiltration or necrosis of the conjunctival membrane or of the cornea. I regret exceedingly that there were not at hand the facilities with which to pursue the bacteriological examination of the discharges. I am inclined, however, to the belief that the disturbance of the conjunctiva bore no part as a local manifestation of the general disease but was produced by contamination from dirty fingers carried to the eyes, because, in several instances the affection was one-sided, and when simple cleanliness was maintained and the eyes douched with weak antiseptic solutions the trouble speedily disappeared.

The motor disturbances were as follows: internal squint involving both eyes in two cases; in another case there was complete ptosis of the left side. All of the cases displayed prompt iridic reaction except one in which there was complete mydriasis, yet the pupil became slightly smaller during convergence. The pupils presented irregular degrees of dilatation, the measurement in all the cases ranged from one millimeter to ten millimeters; in sixteen there was equality in both eyes, with inequality in six, and pin-point contraction in three.

In no case was there cloudiness or other disturbance of the media, nor was there found disease of the iris, or the chorioid and of the retina. In searching the literature upon the subject one finds it repeatedly noted that suppurative disease of the chorioid and vitreous have been present in numerous epidemics of meningitis, even in those occurring in this country.

The chief elements of interest in the ophthalmoscopic examinations were those manifestations of changes in tho optic nerve and its vascular system. Owing to the tender age of three of the patients it was impossible to make satisfactory examinations of their eyegrounds. In nearly all of the cases there was congestion of the optic disk with concurrent congestion of the chorioid and retina. It is possible that these instances denoted the incipient stages of optic neuritis, for the optic nerve heads were edematous, and their surfaces and border lines were blurred, usually to unequal degrees in the two eyes: one case presented a height of three diopters of the right disk, while the left disk was measured by a five diopters lens. In this case there were no hemorrhages although the vascular disturbance was marked by great distention and tortuosity of the venous trunks with marked contraction and irregularity of the arterial currents. In no case was hemorrhage or embolic infarction noted In numerous instances the lymph-sheaths of even the smallest demonstrable vessels were distended; in two or three cases the circumpapillary region was free while the swellings were noted in the periphery at some distance from the disk.

There were fifteen deaths among the cases treated at the Hospital: of the twenty-two cases which I examined eight proved fatal, the deaths occuring during the active stages of the disease. I regret that it was impossible to obtain permission to make post-mortem examinations. The child with the marked choked disk died after a prolonged illness during which the fundus remained practically unchanged. In the woman with the facial paralysis with ptosis the symptoms were maintained during her stay in the Hospital. Several weeks after her discharge therefrom she died of 'heart failure.'

Up to this date I have not been able to induce any of the surviving patients to report for further examinations—therefore I cannot tell what permanent changes have taken place in their ocular structures.

Aside from the scientific interest which the above report bears upon the study of this serious affection we must consider the importance of a systematic examination of the eyes, using wherever possible the ophthalmoscope, in all persons attacked by epidemic cerebro-spinal meningitis. It is in the experience of those connected with the large ophthalmic clinics to frequently see patients whose optic nerves are in a state of atrophy, more or less complete, from whom it is learned that at a time, years or months previous, there had been an attack of this disease. Rarely do cases occur at the clinics with the optic neuritis in an advancing stage. Through the kindness of Dr. Harlan I saw at his clinic at Wills' Hospital a child with double progressive choked disk; the child had only lately recovered from cerebro-spinal meningitis, having been attacked during the present epidemic.

211 South Seventeenth Street.

# HEMIANOPSIA, HALF-BLINDNESS. ITS FORMS, ANATOMY, ETIOLOGY, DIAGNOSIS, PROGNOSIS AND THERAPY.

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TRANSLATED AND EDITED BY

PAUL TURNER VAUGHN, M D.,

HOT SPRINGS, ARK.

(Continued from January number.)

Foerster had already remarked that the faculty of recognizing and remembering places had become markedly affected in his patient with appearance of the second hemianopsia. The same also occured in the cases of Graenouw and Magnus. The latter's patient could not get around by himself in his bedroom which he had occupied for many years. He was not able to find his way from his bed to his sofa standing a short distance opposite by himself although for three weeks he had been daily led to it. Foerster's patient could not describe the windows, tables etc. in the room in which he worked for four years. In Peter's case similiar symptoms appeared after the left sided hemianopsia. This author also reports a case in which in left sided hemianopsia, in a patient who formerly had been infected with syphilis a marked disturbance for recognizing places was present in spite of absence of other disturbances (speech good, faculty to read good). Similar cases have been collected by Wilbrand[14]b and d. The symptom of a disturbance in the faculty of recognizing and remembering places was not present in Schweigger's, Gaffron's, Jocq's, Brueckner's and my case; in Vorster's it was present perhaps in only a slight degree.

Sachs has arrived at the conclusion that "the hyperassociation, the connection and classification of individual optic pictures, upon which the faculty of remembering and recognizing places depends, takes place inside of the occipital lobe, while the true recognition of objects is a labor of the whole cortex and especially of the temporal lobe and its connection with the other brain portions." In disease of one occipital lobe the other one takes the place of the cells which have become invalid. In order to explain the appearance of disturbances in the faculty of remembering and recognizing places and things in unilateral hemianopsia, and the occasional absence of the same in bilateral, Peters thinks it necessary to believe that disturbances in this faculty are present if not very extensive lesions exist in the association tracts running in the middle line (in his case disturbances were present in the right side as far as the ependyma of the left lateral ventricle, in Foerster's in the corpus callosum) which tracts are intented to conduct the individual optic impressions to the other portions of the brain for the formation of "optic series" and extensive pictures. It appears to me to be going a little too far if it is desired to again claim a special center for this faculty, because in all cases so far as observed other disturbances were present in the mental functions. For instance the patient above mentioned in whom right sided hemianopsia and and alexia existed, but who could easily write words and letters, told me that if he traversed a street which passed exactly in front of his house, he often went wrong upon returning home because of turning into another street. Of course this had never happened to him formerly; he also otherwise noticed that he could not find his way correctly. Consequently here also is a diminution in the faculty of recognizing places! Moreover he complained that often for a long time he had to think for what purpose he should use the handkerchief he carried in his pocket; that he often held his trousers in his hands for a long time before he remembered that he must put them on, etc. According to this the memory for the destination of the handkerchief and the trousers, etc. is lost as well as the memory for places. Shall we localize all of these? Here a general diminution of the mental functions exists.

In all cases of bilateral hemianopsia which appear after a previous unilateral hemianopsia it is characteristic that a small central or nearly central field of vision remains intact or is resituted. The complete blindness present in the beginning of some cases (Vorster, Schmidt-Rimpler, Magnus, Jocq's, Gaffron, Brueckner) could have been present in the others also but always rapidly disappeared.

The intermediary hemianopsias originate in disturbances in the pulvinar, in the most posterior part of the thalmus opticus. The other two primary optic ganglia—corpora geniculata externa, and the anterior corpus quadrigemium—bear, apparently, no particular relationship to direct vision. However the tractus fibers pass into all three of these large ganglia. They form here with the protoplasmic processes of the ganglion cells the neuropilem; the ganglion cells themselves send axis cylinders toward the coretx. One portion of the tractus fibers, those going to the muscle nuclei, probably only pass through this part.

The anterior corpus quadrigeminum and the optic thalamus receive through the lemniscus fibers however the sensitive fibers of the entire opposite half of the body; both corpora quadrigemina are connected with each other by means of commissure fibers. The external corpus geniculatum receives tractus fibers and sends fibers to the coronal radiation. It seems probable therefore that these large basal ganglia of the opticus occasion the involuntary reflexes which influence not only the eye muscles, but also the muscles of the head (the pulvinar probably is connected with the facialis necleus) and the muscles of the other half of the body. Herein consists the significance of the optic thalamus and of the corpus quadrigeminum in the involuntary mimic (Bechterew, Nothnagel): turning the eyes and head to one side, drawing of the face, fright, involuntary closure of the lids, nystagmus, etc. In injuries and disturbances of the corpus quadrigeminum we generally do not find disturbances of seeing (Gowers, Nieden, Marina[174]) If optic disturbances be present, then they are attributable to neuritis or compression of the tractus. On the contrary injury to the corpus geniculatum externum according to anatomical investigations lead to hemianopsia. It appears however, that such singular and circumscribed lesions have never yet been observed.

Castellino[177]a, who destroyed in rabbits and in dogs the thalami optici saw subsequently symptoms of motor weakness, circular movements and blindness appear. He considers the thalami optici as organs of assistance for the impulses of movement originating in the cerebral cortex and believes them to be the centers for muscle sense and for those organs with which we estimate distances.

Clinically in lesions of the pulvinar and of the thalamus opticus contralateral hemianopsias have often with certainty been observed. For instance Pflueger[63] saw a right sided hemianopsia caused by a hemorrhagic spot in the right corpus striatum and in the lower portions of the thalamus opticus which extended somewhat into the medullary substance. Furthermore, as in the already mentioned case of Hughlings-Jackson[64] and Gowers in which left sided hemiplegia, hemianesthesia and homonymous hemianopsia existed, section showed posterior half of the right optic thalamus softened, the pulvinar broken down and destroyed. The softening did not pass the borders of the thalamus. Cerebral cortex was intact.

Also in a case described by Dercum, the pulvinar of the left optic thalamus as well as the adjoining portions of the nucleus caudatus were particularly affected by a gliosarcoma, while the optic tracts and the corpus quadrigeminum were proven to be normal microscopically. Right sided hemianopsia with hemianopic pupillary reaction and right sided hemiplegia existed.

## BASAL HEMIANOPSIAS.

The most frequent case of complete homonymous hemianopsia, so far as the intracranial course of the opticus, the chiasma and tractus are concerned lie in a lesion of the tractus. Occasionally according to a communication of Samelsohn's[23]b a typical hemiachromatopsia is produced by the same cause. In his case which came to section a glio-sarcoma of the optic tract with involvement of the thalamus and the corpus quadrigeminum existed, while the cortex and the optic radiation were entirely free. Leyden's[102] case is also remarkable; in this the hemianopic pupillary reaction was especially plain. The case was an old woman in whom left sided hemiplegia and hemianopsia existed, and in addition also ptosis of the left eye and marked rotation of the eye toward the right. The pupillary reaction was plainly visible only when the seeing halves were illuminated. On account of this the location of the spot was diagnosed as being anterior to the copora quadrigemina. The autopsy revealed a softened spot in the right lenticular nucleus extending into the pedunculus cerebri and involving the right tractus.

It does not appear very probable that imperfect symmetrical defects of the visual field would be caused by an affection of the tractus, because the fibers which supply identical portions of the retina—both the crossed bundles and the non-crossed bundles—are still separated in it; it would therefore always be necessary to suppose two separated spots (hemorrhages etc.). Equally difficult would it be to explain the complete symetrical defects by affections of the chiasma or of the opticus, for in both of these, the crossed and uncrossed fibres lie close to one another: consequently in regard to the optici it would hardly be possible for precisely those fibers supplying symmetrical parts to be destroyed, for instance, by a tumor in both optic nerves: it would be more probable in the

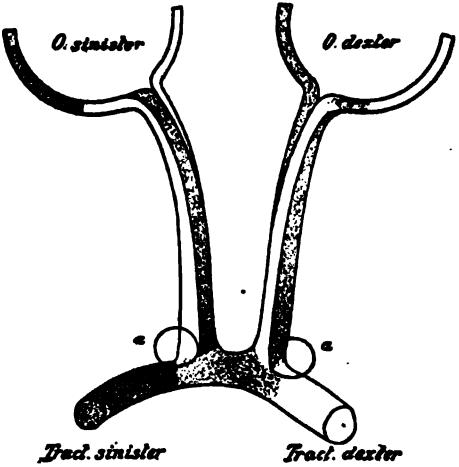

Fig. 9.

chiasma, but here as a rule amblyopia with irregular contractions in the field of vision is produced; occasionally one sided hemianopsia—in tumors of the hypophysis for instance (Rath[84]).

If one found, as Henschen, only crossing fibers in the median line of the chiasma, a lesion here would cause a bitemporal hemianopsia (hemianopsia heteronyma lateralis). According to the arrangement of the chiasma crossing and of the couse of fibers previously described in Fig. 3, a tumor situated in the anterior or posterior angle would be sufficient cause. The latter, however, does not appear from clynical findings correct, as Weir-Mitchell observed a case in which the chiasma was separated in the sagittal direction by an aneurysm and produced—as would be expected—a not exactly pure bitemporal hemianopsia. A. von Graefe had already said that a bitemporal hemianopsia never terminates so distinctly in the median line as the homonymous. This was the case in the one reported by Saemisch[66]. A patient 23 years old with diminution of central vision (also headache, loss of appetite and quickened pulse) came for treatment. Gradually bilateral amaurosis developed which lasted 19 days. Then sensation for light reappeared and central vision increased, but hemianopsia lateralis remained; however, quite a vertical transition zone existed between the blind and the normally functionating halves of the visual field. Nothing abnormal was found ophthalmoscopically. About a year later death occured with symptoms of meningitis. Section showed a sarcomatous tumor about the size of a pigeon's egg between the optic nerves in front of the chiasma which the laterally displaced optic nerves encircled in a fork like manner. A case of D. E. Mueller's[67] ran a similar course with changing amaurosis and temporal hemianopsia; here a sarcomatous degeneration of the hypophysis was concerned. Peretti[134] saw a bitemporal hemianopsia after fracture of the base—amblyopia followed later in one eye.

Such basal affections are found quite frequently in syphilis and here also often a cure is effected: for instance Uthoff[24]b saw five times homonymous hemianopsias and twice temporal hemianopsias. Oppenheim[92] emphasizes especially the expansion of the gelatinous partly sward-like new formation in diffuse gummatous meningitis which fills all the depressions and fissures on the cerebral base and affects the optic nerves and the nerves of the eye. The optic nerves can, in this condition, appear ophthalmoscopically intact. In additon to hemianopsias, unilateral or bilateral amaurosis can exist.

Hemianopsias of this class have also been observed clinically. Foerster had under his treatment for ten years a female patient in whom bitemporal hemianopsia (Foerster designates it "median hemiopia") developed in a few weeks with irritating headaches, vomiting, loss of sleep etc. The cerebral symptoms disappeared under the inunction treatment. The internal halves of the visual field remained unchanged; the optic papillae had an atrophic appearance. A meningitic process in the chiasma was claimed as the cause of these symptoms. Von Graefe saw a 36 year old woman in whom with headaches, right sided abducens paralysis and bitemporal hemianopsia appeared. The line of separation of absent light sensation passed through the point of fixation. Later central vision was lessened and polyuria existed. Ophthalmoscopically nothing abnormal was found. After a year everything was perfectly normal.

Because here, as mentioned, are concerned basal lesions affecting directly the optic nerves, and particularly their fibers in the chiasma, it is clear why simultaneous atrophy of the optic nerves and unilateral or bilateral amblyopia is observed. In Hirscberg's[47] case the left eye became perfectly blind, the right, only amblyopic; in Jany's[38] case vision in both eyes was only 1/12. Vossius[118] observed a similar case. In a case of bitemporal hemianopsia which I saw, the eye in which the defect in the field of vision was not quite perfectly hemianopic, was more amblyopic than the other, in which the field of vision terminated in the median line. The normal visual field for colors in the functionating halves of the visual fields, and also the normal papillae spoke against simple atrophic processes existing in both optic nerves, these could possibly have caused similar defects. In one eye the papillae was slightly pale. Syphilis did not exist.

Also in acromegalia cases of bilateral hemianopsia have been observed (Schultze[110], Boltz[111], Pflueger[108], Asmus[112], Mével[128], Benson[178], Mendel[182]); they were combined with atrophic changes in the papillae and with amblyopia. It has been attempted to find their causation in the compression—as section has shown—of the chiasma by the generally much enlarged hypophysis. That no stauungspapilla was simultaneously present correspondends with the other conditions in tumors of the hypophysis,

It is hardly to be believed that nasal hemianopsias are caused by nasal processes. According to the diagram given by us they could possibly be caused only by tumors which, situated in the lateral angles of the chiasma, affect both non-crossing bundles; this is however, at least if only the non-crossing bundles are involved, extremely improbable. In Wernicke's diagram a tumor situated in the anterior angle of the chiasma would produce them.

Herschel[69] reports a case in which after an apoplectic attack a bilateral nasal hemianopsia appeared, which was limited by a vertical passing through the point of fixation. Herschel claimed two symmetrical spots in the occipital lobe as the cause. This however is not very probable as there, according to other experiences, the fiber bundles, which supply identical portions of the retina, lie very close to one another. More probable would double spots in the tractus and in its course as far as the external corpus geniculatum, where the crossed and non-crossed bundles, according to Henschen, still lie separated. Usually bilateral cases of neuritis are concerned. These can occasionally resemble nasal hemianopsia. In a case of inferior hemianopsia reported by Adelheim[129] the white discoloration of the upper half of the papilla, as well as the absence of other cerebral symptoms spoke in favor of this acceptation. After an attack of typhoid in a strong man 36 years old there appeared, first in the left eye and six days later in the right, a defect in the field of vision. The entire superior half of the visual field was absent on both sides, in the left eye also a portion of the superior external; the line of section passed through the fixation point, V. on both sides=1. Four and a half years later the condition was the same.

The explanation of nasal hemianopsias given by Knapp, that they are caused by pressure of atheromatous arteries upon the angle of the chiasma, can only in very exceptional cases be true, as the investigations made by Pleng[70]—who examined with the perimeter a number of people from 70—80 years of age suffering from arterial atheroma—did not show a corresponding contraction of the field of vision. On the other hand from anatomical observations in partial atrophy of the optic nerve in consequence of pressure from markedly atheromatous vessels (carotis and arteria ophthalmica), as described by Bernheimer[71], the possibility of an influence upon the origin of defects of the visual field cannot be entirely denied. Also in Knapp's case where the nasal hemianopsia was combined with marked bilateral amblyopia an atheroma of the circle of Willis existed. But here also as in the case of Mandelstamm[1]. William[93], Eales[135] simultaneous neuritis was present.

The few known cases of hemianopsia superior or inferior, as previously mentioned, are very hard to explain if a single spot be supposed. Mauthner[85]b who observed a superior hemianopsia in both eyes after an apoplectic attack with other slight cerebral symptoms, supposes a tumor pressing upon the lower surface of the opticus. Schweigger[31], who reported two cases, leans more toward the acceptation of a bilateral opticus affection. This was not present in the dissected case of Werthe[119], where after a fall amaurosis at first existed, and then superior hemianopsia. The latter, however, was not perfect. Dissection showed many old hemorrhagic spots and pachymeningitis. Nothnagel[183], reports also a case of superior hemianopsia. It appeared in a somewhat demented patient suddenly; the inferior half of the visual field however was also not entirely intact; as to the colors only red could be recognized and no exact idea of the size of objects existed. The pupillary reflex was intact; ophthalmoscopically everything normal. Nothnagel made the diagnosis and justly so, that in this case a lesion of the optic field in the cerebral cortex of both occipital lobes was present—as he had once before found confirmed by a section.

## CAUSATION, DIAGNOSIS, PROGNOSIS AND THERAPY OF HEMIANOPSIA.

The different varieties of disease of the brain and its meninges are the etiologic factors in hemianopsia: hemorrhages, atheromatous blood vessels and aneurysms, softenings,. abscesses (also those caused by otitis media purulenta), tumors (including cystercerci), edema of the brain, pachymeningitis, congestions of the brain, are the principal causes: furthermore, tumors and affections of the cranial bones. Traumata also cause, as we have seen, hemianopsias; and also acromeglia, uraemia, carbonic acid poisoning and lead poisoning have been observed as causes (Hertel). Chevallereau[88] saw two cases after metrorrhagias. In hysteria, pure hemianopsia (without simultaneous amblyopia or concentric contraction of the visual field) appears not to exist*. The same is true of neurasthenia.

Often it is very difficult to diagnose the seat of the lesion. If basal processes be concerned which affect the chiasma and the optic nerves, more frequently there will be present a complication with amaurosis or amblyopia in one eye: also here irregular forms of hemianopic defects in the visual field will exist. The diagnosis becomes more probable in complicating paralyses of the eye muscles. Atrophy appearing early, or inflammatory symptoms seen upon the papillae must also be considered as momenta assisting in the diagnosis. Stauungspapilla must however be excepted, as this can develope in cortical hemianopsias when they are caused by tumors. Moreover naturally pseudo-hemianopsias must be excluded as they are occasioned sometimes by bilateral retro-bulbar neuritis, or by progressive atrophy of the optic nerve—generally, however, in these besides early diminution of central vision only approximately symmetrical defects in the field of vision are produced. Homonymous lateral hemianopsia with good central vision exists as a rule in affections of the tractus as well as in lesions more centrally located. Partially symmetrical anomalies speak against the seat being in the tractus and in the pulvinar, because here the nerve fibers which supply identical parts of the retina in both eyes no longer lie so near to one another. If they be very marked the seat, as Noyes also claims, is probably in the center of vision. Hemianopsias of the tractus, pulvinar, optic radiation, and cortex can, if no complications accompany, be differentiated by the hemianopic pupillar rigidity: this is absent if the pupillar fibers remain intact as far as the corpora quadrigemina. In basal processes however, often, it cannot be proven with certainty, or it is entirely absent—as Uhthoff[241], with right, emphasizes. If hemiplegia be combined with hemianopsia, the disturbance can be located inside the internal capsule as well as in the cerebral cortex (in addition to in the center of vision, in the central convolution and in the lobus paracentralis); if convulsions were formerly present they indicate more a functional disturbance it the cortex, while post hemiplegic irritative symptoms (as chorea, athetosis, tremors) indicate more probably disturbances in the region of the thalamus opticus. A paralysis of the leg on the same side as the hemianopsia indicates an affection of the lobus paracentralis and of the upper third of the central convolutions; of the arm on the same side, an affection of the middle third; and of the facialis, of the lower third. Accompanying aphasia (motor aphasia caused by disturbances in the gyri about the fossa Sylvii, ataxic aphasia in right handed people caused by disturbances in the left third frontal convolution) and alexia indicate cortical hemianopsia. On the other hand hemianesthesia (anesthesia of the conjunctiva also) in hemianopsia indicates rather a lesion of the most posterior portion of the internal capsule.

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*The editor has seen hysteric amblyopia of the temporal hemianopic type. See "Amblyopia of the Visual Field," p. 486, Amer. Text Book, Dis. of Eye, Ear, Nose and Throat, 1899.

If visual hallucinations precede the hemianopsia then an affection of the optic center is probable, and also if they exist in cases of incomplete hemianopsia. Here however, it must be remembered, as in all of the differential symptoms previously given, that also reflex causes (generally transient however) can produce very aggravating diagnostic complications.

If pure hemianopsias, without symptoms of paralysis be concerned, especially if the same be not complete, then the cause with great probability can be found in the optic center, or in the adjoining optic radiation. This is also true of complete color hemianopsias—as we think with Nuel that the sense for space and the sense for colors coincide. If we draw conclusions from experiences in central scotomata, where previously often a disturbance for colors existed, and then the identical place became insensible and entirely blind for white we will find that the same nerve fibers conduct both perceptions: the conduction for colors becomes however more easily interrupted.

In cerebral diagnosis in spite of considering all probable causes, it is known that often very uncomfortable surprises occur. Consequently what is said above concerning complicating hemiplegias and paralysis must only be accepted with caution: for instance multiple spots can be located in very separated places, or a spot can operate through pressure upon adjoining portions, to say nothing of reflex actions.

Diagnostically it must be remembered that also transient hemianopsias appear in scintillating scotoma, and often even with grave cerebral symptoms without a material basis being present, or a permanent anomaly remaining. Only seldom has it been observed that a transient hemianopsia is followed by a permanent one (Pooley[39]).

Concerning the variety of original intracranial disease, we must judge after a general investigation of the development of the affection and of the etiology. If stauungspapilla exist simultaneously then probably a tumor is the cause; if neuritis descendens exist then probably a meningitis: in either case, however, a true hemianopsia is hardly to be expected.

In regard to the complaints and aggravations of the patients it must be said that right sided hemianopsias are especially disagreeable because reading and writing—the words to the right of the fixation point being absent—is much more difficult, than if a left sided homonymous hemianopsia exist. The inconvenience in reading often first attracts the attention of the patient. In other cases they refer the inability to see to one side to the absence of vision in the respective eye; so in right sided hemianopsia they make the complaint that the right eye is blind.

Imperfect and peripherally situated hemianopsias are often overlooked. The rarer temporal hemianopsias hinder remarkably the faculty of recognition, but homonymous lateral hemianopsias are also very aggravating in this respect, because all objects upon the absent side cannot be seen. Often complaints are made of appearances of balls of light, figures, etc., which sometimes fill the whole field of vision, sometimes the hemianopic, and still at other times the intact.

The prognosis is favorable in the sense that in hemianopsias as a rule amaurosis does not occur. Schweigger saw a second time a patient with lateral hemianopsia 16 years after the first examination and found no changes had taken place. Vision had remained normal. This naturally depends upon the causation. If progressive basal processes be concerned, or if the cortex be affected bilaterally, amaurosis also can finally develop. In other cases as we have already seen amaurosis is present first, and from this hemianopsia develops. In perfect homonymous hemianopsia associated with hemiplegia recovery is seldom complete; usually the hemiplegia disappears earlier than the hemianopsia. Exceptionally once in a while it occurs otherwise. Cortical hemianopsias on the contrary, usually based upon apoplexies, have a relatively good prognosis if no other paralysis coexist and particularly if they are imperfect and affect only symmetrical parts of the field of vision. I have, for instance, years afterward seen thc small symmetrical paracentral scotomata disappear.

The field of vision of an incomplete right sided hemianopsia drawn in Fig. 6 belongs to a gentleman 61 years old, who noticed suddenly eight days before in the evening that he could see nothing on the right side—heads appeared to him only in halves for instance. Other cerebral symptoms were absent and headache had not been present. The patient—otherwise sound—suffered from hypertrophy of the heart and with insufficiency of the arotic and mitral valves. Gradually, vision upon the right side reappeared again so that at the examination (January 23, 1896) the field of vision given above existed. But in the restituted portion of the right half of the field the vision was more dim than in the other part—the white ball appeared more blurred than upon the left side. By using cathartics and living the quietest life possible the extent of the damaged field of vision lessened so much that on March 11th for white and colors also it was entirely normal; only the eccentric vision remained a little in arrears compared with that of the left side. Central vision always remained normal.

The therapy must be directed against the cause of the hemianopsia, so far as it can be ascertained. In congestive states, in the beginning besides rest in a cool half darkened room, local abstraction of blood and cathartics are to be recommended; later iodid of potassium. In syphilis the proper treatment, early instituted, is especially favorable. In certain conditions an opening of the cranium—as explained in therapy of stauungspapilla—must be considered.

## LITERATURE.

1a. Mandelstamm.—Ueber Sehnervenkreuzung und Hemiopie. Archiv f. Ophthalmologie, Bd. 19, Abth. 2, S. 39. 1873.
b. Zwei Fälle von Neuritis optica durch basilaren Tumor (mit nasaler Hemiopie). Pagenstecher's klin. Mittheilungen, Heft 3, S. 72. 1866.
2. Michel.—Ueber den Bau des Chiasma n. opticorum. Archiv f. Ophthalmologie, Bd. 19, Abth. 2, S. 59. 1873.
—Eod. loc. Bd. 23, Abth. 2, S. 227. 1877.
—Ueber Sehnervendegeneration und Sehnervenkreuzung. In der Festgabe zum 70. Geburtstage v. Köllicker's, Wiesbaden 1887, u. Verhandlungen der 65. Naturforscher-Versammlung zu Nürnberg II, S. 231. 1893.
3. Gudden.—Ueber die Kreuzung der Fasern im Chiasma n. opticorum. Archiv f. Ophthalomlogie, Bd. 20, Abth. 2, S. 249. 1874; eod. loc. Bd. 25, Abth. 1, S. 1 u. Bd. 25, Abth. 4, S. 237. 1879.
4. Bernheimer.—Demonstration von Chiasmaschnitten des Menschen. Bericht der Ophthalmolog. Gesellsch. zu Heidelberg, 1887, S. 195.
—Ueber Chiasma n. opticorum des Menschen. Bericht über den VII. periodischen internat. Ophthamologen-Congress zu Heidelberg, 1888, S. 317.
—Ueber Entwicklung und Verlauf der Markfasern im Chiasma n. opticorum des Menschen. Habilitationsschrift. Wiesbaden 1889, u. Archiv f. Augenheilkunde, Bd. 21. 1899.
—Die Sehnervenkreuzung beim Menschen. Wiener klin. Wochenschr. Nr. 34, 1896.
5. Woinow.—Ueber Kreuzung des Sehnerven. Klin. Monatsbl. f. Augenheilkunde, S. 424. 1875.
6a. Schmidt-Rimpler.—Demonstration zur Sehnervenkreuzung. Bericht der Ophthalmolog. Gesellsch. zu Heidelberg 1877, S. 44.

b. —Zur Sehnervenkreuzung. Demonstration von Präparaten von Dr. Cramer. Eod. loc. 1896, S. 328. S. auch Cramer. 68. Versammlung deutscher Naturforscher 1896.

c. —Zur Lage des Sehcentrums beim Menschen. Bericht der Heidelberger Ophthalmolog. Gesellsch. 1883,, S. 5.

7. Kellermann.—Anatomische Untersuchungen atrophischer Sehnerven mit einem Beitrage zur Frage der Sehnervenkreuzung im Chiasma. Beilageheft zu Klin. Monatsbl. f. Augenheilkunde 1879.

8. Becker.—Ueber Augenkrankheiten, mit Rücksicht auf Localisation von Gehirnleiden. Vortrag, gehalten auf dem internat. medic. Congress in Amsterdam. 1879.

9. Baumgarten.—Zur sogenannten Semidecussation der Opticusfasern. Centralbl. f. die medic. Wissenschaften. Nr. 31. 1878.

—Hemiopie nach Erkrankung der occipitalen Hirnrinde. Eod. loc. Nr. 21.

10a. Henschen (Upsala).—Klinische und anatomische Beiträge zur Pathologie des Gehirns. 1. Theil 1890, 2. Theil 1892 u. 3. Theil 1894.

b. —On the visual path and centre. The Brain XVI, S. 170. 1893.

c. —Les centres optiques cérébraux. Revue générale d'Ophthalm. 1894, S. 210 u. 337. Ref. in Nagel's Jahresber. f. Ophthalmologie 1894, S. 34.

11. Darkschewitsch.—Ueber die Kreuzung der Sehnervenfasern. Archiv f. Ophthalmologie, Bd. 37, Abth. 1, S. 1. 1891. (Kritik der Michel'schen 1887 veröffentlichten Arbeit.)

12. Marchand.—Beitrag zur Kenntniss der homonymen bilateralen Hemianopsie und der Faserkreuzung im Chiasma opticum. Archiv f. Ophthalmologie, Bd. 28, S. 63. 1882.

13a. Haab.—Ueber Cortex-Hemianopie. Klin. Monatsbl. f. Augenheilkunde, S. 141. 1882.

b. —Beobachtungen eines neuen Pupillarreflexes. Ref. von Emmert im Centralbl. f. prakt. Augenheilkunde 1886, S. 157.

c. —Der Hirnrindenreflex der Pupille. Festschrift. Zürich 1891.

14a. Wilbrand.—Ophthalmiatrische Beiträge zur Diagnostik der Hirnkrankheiten, Wiesbaden 1884. Ref. in Nagel's Jahresber. f. Ophthamologie 1883, S. 332.

b. —Ueber Hemianopsie und ihr Verhältniss zur topischen Diagnose der Gehirnkrankheiten,

c. —Die hemianopischen Gesichtsfeldformen und das optische Wahrnehmungscentrum. Wiesbaden 1890.

d. —Die Seelenblindheit als Herderscheinung etc. Wiesbaden. 1887.

e. —Die Doppelversorgung der Macula lutea und der Förstersche Fall von doppelseitiger homonymer Hemianopsie. Archiv f. Augenheilkunde, Bd. 31, Ergänzungsheft, S. 93. 1895.

f. —Ein Fall von rechtseitiger lateraler Hemianopsie mit Sectionsbefund. Archiv f. Ophthalmologie, Bd. 31, Abth. 3, S. 119. 1885.

15. Kowalewsky.—Veränderung des Occipitallappens bei chronischen Blinden. Neurolog. Centralbl. Nr. 15. 1883 (Referat).

16. Bernhardt.—Vorkommen und Bedeutung der Hemiopie bei Aphasischen. Berl. klin. Wochenschr. Nr. 32. 1872.

17. Purtscher.—Ueber Kreuzung und Atrophie der Nervi und Tractus optici. Archiv f. Ophthalmologie. Bd. 26, Abth. 2, S. 191, 1880.

18. Siemerling.—Ein Fall von gummöser Erkrankung der Hirnbasis mit Betheiligung des Chiasma. n. opticorum. Archiv f. Psychiatrie u. Nervenkrankheiten, Bd. 19, S. 401. 1888.

—Zur Syhpilis des Centralnervensystems. Archiv f. Psychiatrie u. Nervenkrankheiten. Bd. 22. 1890.

19. Schmidt-Rimpler.—Cortex-Hemianopsie mit secundärer Opticusatrophie. Archiv f. Augenheilkunde, Bd. 19, S. 296. 1888. —Doppelseitige Hemianopsie mit Sectionsbefund. Archiv f. Augenheilkunde, Bd. 26, S. 181. 1893.

20. Nothnagel.—Topische Diagnostik der Gehirnkrankheiten. 1879. — On the diagnosis of diseases of the corpora quadrigemina. Sep.-Abdr. 1890.

21. Wernicke.—Lehrbuch der Gehirnkrankheiten, u. Archiv f. Anatomie u. Physiologie. Physiolog. Abth. 1881. —Hirngeschwülste. 1881.

22. Monakow.—Experimentelle Untersuchungen über optische Centren und Bahnen nebst klinischen Beiträgen zur corticalen Hemianopsie und Alexie. Arch. f. Psychiatrie u. Nervenkrankheiten. Bd. 24, 1892, Bd. 26, Heft 1, Bd. 27, Heft 1; Correspondenzbl. f. Schweizer Aerzte, 1. Juni 1888, S. 346, u. Neurolog. Centralbl. 1889, Nr. 13.

23a. Samelsohn.—Zur Anatomie und Nosologie der retrobulbären Neuritis. Archiv f. Ophthalmologie, Bd. 28, Abth. 1, S. 1, 1882.

b. —Ein Fall von Hemiachromatopsie. Berl. klin. Wochenschr. 1890, S. 331.

c. —Seltenere Beobachtungen zur Semiotik der Pupillarreaction. Deutsche medic. Wochenschr, 1894, Nr. 4.

24a. Uhthoff.—Untersuchungen über den Einfluss des chronischen Alkoholismus auf das menschliche Sehorgan. Archiv f. Ophthalmologie, Bd. 32, Abth. 4, S. 95, 1886, u. Bd. 33, Abth. 1, S. 257. 1887.

b. —Untersuchungen über die bei Syphilis des Centralnervensystems vorkommenden Augenstörungen. Ed. loc. Bd. 39, Abth. 1, S. 1, u. Abth. 3, S. 126, 1893.

25. Jatzow.—Beitrag zur Kenntniss, der retrobulbären Propagation des Chorioidalsarcoms und zur Frage des Faserverlaufes im Sehnervengebiet. Archiv f. Ophthalmologi, Bd. 31, Abth. 2. 1885.

26. Bechterew.—Ueber die Sehfläche auf der Oberfläche der Hirnhemisphären. Archiv f. Psychiatrie, Neurologie etc. XV, 1, S. 1. Ref. in Nagel's Jahresber. f. Ophthalmologie 1891, S. 187.

b. —Ueber den Verlauf der pupillenverengernden Fasern und über die Localisation im Centrum der Iris. Pflüger's Archiv 1883.

c. —Neurolog. Centralbl. 1894, S. 802.

27. Nieden.—Ein Fall von einseitiger temporaler Hemianopsie des rechten Auges nach Trepanation des linken Hinterhauptes. Archiv f. Ophthalmologie, Bd. 29, Abth. 3, S. 143, u. Bd. 29, Abth. 4, S. 271. 1883.

28. Gowers.—Vorlesungen über die Diagnostik der Hirnkrankheiten. Deutsch von Mommsen, S. 26.

29. Nettleship.—Transactions of the Ophth. Soc. Vol. 1.

30. Vossius.—Ein Fall von beiderseitigem centralen Scotom mit pathologisch-anatomischem Befund. Archiv f. Ophthalmologie, Bd. 28, 3, S. 201. 1882.

31a. Schweigger.—Hemiopsie und Sehnervenleiden. Archiv f. Ophthalmologie, Bd. 22, Abth. 3, S. 276. 1876.

b. —Ein Fall von beiderseitiger Hemiopie. Archiv f. Augenheilkunde, Bd. 22, S. 336. 1890.

32. Bunge.—Ueber Gesichtsfeld und Faserverlauf im optischen Leitungsapparat. Halle, 1884.

33. Stilling.—Ueber den Bau der optischen Centralorgane. Kassel u. Berlin 1892.

34. Singer und Münzer.—Beitrag zur Kenntniss der Sehnervenkreuzung. Anzeiger der kaiserl. Akad. d. Wissenschaften in Wien, Mathem.-naturwiss. Cl. 1888, Nr. 8, S. 63, u. Neurolog. Centralbl. 1889, Nr. 2.

35. Burdach.—Zur Faserkreuzung im Chiasma und in den Tract. nerv. opticor. Archiv f. Ophthalmologie, Bd. 29, Abth. 3, S. 135. 1883.

36. Bjerrum.—Ein Fall von Hemianopsia partialis. Heilung. Centralbl. f. prakt. Augenheilkunde 1891, S. 120.

37. Jastrowitz.—Tumor im linken Hinterlappen. Aphasie, rechtsseitige Hemianopsie. Centralbl. f. prakt. Augenheilkunde 1877. Decemberheft.

38. Jany.—Zur Hemianopsia temporalis. Centralbl. f. prakt. Augenheilkunde, S. 101. 1879.

39. Pooley.—Rechtsseitige binoculäre Hemiopie, bedingt durch eine Gummagegeschwulst am linken hinteren Gehirnlappen. Archiv f. Augenheilkunde, Bd. 6, S. 27. 1877.

40. Gowers.—Pathologischer Beweis einer unvollständigen Kreuzung der Sehnervenfasern beim Menschen. Centralbl. f. medic. Wissenschaft 1878, Nr. 31.

41. Fritsch und Hitzig.—Untersuchungen über das Gehirn. 1874.

42. Ferrier.—Functions of the brain, London 1876; übers von Obersteiner, Braunschweig 1879.

43. Nothnagel.—Experimentelle Untersuchungen über die Functionen des Gehirns. Virchow's Archiv, Bd. 57, 58, 60 u. 62.

44. Munk.—Ueber die Functionen der Grosshirnrinde. Berlin 1881.

45. Edinger.—Zehn Vorlesungen über den Bau der nervösen Centralorgane. 1885.

46. Keen und Thompson.—Transactions of the Amer. Ophthal. Society 1871, S. 122.

47. Hirschberg, Beiträge zur praktischen Augenheilkunde, Heft 3. 1878.
—Zur Semidecussation der Sehnervenfasern im Chiasma des Menschen. Virchow's Archiv, Bd. 65, S. 116. 1875.
—Zur Frage der Sehnervenkreuzung. Archiv f. Augen- u. Ohrenheilkunde V, 1. S. 137. 1876.

48. Curschmann und Westphal.—Linksseitige Hemianopsie mit Section. Sitzung der Berliner Gesellsch. f. Psychiatrie u. Nervenkrankheiten, Ref. im Centralbl. f. prakt. Augenheilkunde 1879, S. 181.

49. L. Putzel.—A case of cortical hemianopsie with autopsy. The Medical Rev. 1888, 2. Juni.

50. Seeligmüller.—Jahrbuch der Krankheiten des Rückenmarks und Gehirns. Braunschweig 1887.

51. Rothmann.—Der diagnostische Werth der hemiopischen Papillarreaction. Deutsche medic. Wochenschr. 1894, Nr. 15.

52. Magnus.—Die Entstehung der reflectorischen Pupillenreaction. Breslau 1889, u. Klin. Monatsbl. f. Augenheilkunde 1888.

53. Wernicke.—Ueber hemiopische Pupillenreaction. Fortschritte der Medicin, Bd. 1 u. 2.

54. Leyden.—Ueber hemiopische Pupillenreaction. Deutsche medic. Wochenschr. 1892, S. 3.

55. Mendel. Ueber reflectorische Pupillenstarre. Deutsche medic. Wochenschr. 1889, Nr. 47.

56. Siemerling.—Chronische progressive Lähmung der Augenmuskeln. Archiv f. Psychiatrie u. Nervenkrankheiten, Bd. 22. Supplementheft 1891.

57. Hensen und Völckers.—Ueber den Ursprung der Accommodationsnerven, nebst Bemerkungen über die Functionen der Wurzeln des N. oculomotorius. Archiv f. Ophthalmologie, Bd. 24, Abth. 1, S. 1. 1878.

58a. Heddaeus.—Die centripetalen Pupillenfasern und ihre Function. Festschr. der Aerzte des Regierungsbez. Düsseldorf, 1894, u. Klin. Monatsbl. f. Augenheilkunde, 1893.

b. —Der Haab'sche "Hirnrindenreflex der Pupille" in seiner Beziehung zur hemiopischen Pupillenreaction. Archiv f. Augenheilkunde, Bd. 32, S. 88 1896.

c. —Ueber hemiopische Pupillenreaction. Deutsche medic. Wochenschrift 1893. Nr. 31.

d. —Zur Frage der hemiopischen Pupillenstarre. Allgem. Wiener medic. Zeitschr. 1894, Nr. 31,

59. Perlia.—Die Anatomie des Oculomotoriuscentrums beim Menschen. Archiv f. Ophthalmologie, Bd. 35, Abth. 4. 1889.

60. Guillery.—Ueber die topische Diagnostik der Pupillenreaction bei der Tabes dorsualis. Deutsche medic. Wochenschr. 1892, Nr. 52.

61. Oebeke.—Ueber die Pupillenreaction und einige andere Erscheinungen der allgemeinen progessiven Paralyse. Allgem. Zeitschr. f. Psychiatrie, Bd. 50. 1894.

62. Vialet.—Centres cérébraux de la vision et appareil nerveux visual intracérébral. Rev. générale d'ophthalm. 1893, S. 529; Annal d'oculist, T. 111, S. 161. 1894, u. Recueil d'ophthalmologie, Juni 1894.

63. Pflüger.—Augenklinik in Bern. 1879, S. 57.

64. Hughlings-Jackson.—A case of hemiopia, with hemianaesthesia and hemiplegia. Ophthalmic. hospital Reports, Bd. VII, S. 330, 1875, u. Lancet 1874, S. 306.

65. Weir-Mitchell.—Aneurism of an anomalous artery causing anterior-potserior division of the optic nerves and producing bitemporal hemianopsia. Journ. of nervous and mental diseases. January 1889.

66. Saemisch.—Laterale Hemiopie durch einen Tumor bedingt. Klin. Monatsbl. f. Augenheilkunde 1865, S. 51.

67. D. E. Müller.—Visus dimidiatus bedingt durch eine Geschwulst auf der Sella turcica. Archiv f. Ophthalmologie, Bd. 8, Abth. 1, S. 160 1861.

68. v. Graefe.—Temporale Hemiopie in Folge basilarer Affection. Klin. Monatsbl. f. Augenheilkunde 1865, S. 268.

69. Herschel.—Ueber nasale Hemianopsie. Deutsche medic. Wochenschrift. 1883, Nr. 16.

70. Plenk.—Ueber Hemiopie und Sehnerventrennung. Archiv. f. Augen- u. Ohrenheilkunde 1878, S. 140.

71. Bernheimer.—Ueber Sehnervenveränderungen bei hochgradiger Sclerose der Gehirnarterien. Archiv f. Ophthamologie, Bd. 37, Abth. 2, S. 37. 1891.

72. Pick.—Ueber Hemianopsie bei Urämie. Prager medic. Wochenschrift. 1895, Nr. 45.

73. Förster.—Ueber Rindenblindheit. Archiv f. Ophthalmologie, Bd. 36, S. 94. 1890, u. Sachs, Arbeiten aus der psychiatrischen Klinik in Breslan, Heft 2.

74. Groenouw.—Ueber doppelseitige Hemianopsie centralen Ursprungs. Archiv f. Psychiatrie u. Nervenkrankheiten, Bd. 23, S. 339, 1892.

75. Vorster. Ein Fall von doppelseitiger Hemianopsie mit Seelenblindheit, Photopsien und Gesichtstäuschungen. Allgem. Zeitschr. f. Psychiatrie, Bd. 49, S. 227. 1892.

76. Magnus.—Ein Fall von Rindenblindheit. Deutsche medic. Wochenschr. 1894, No. 4.

77. Kahler.—Beobachtungen über Hemianopsie. Prager medic. Wochenschr. 1887, Nr. 17 u. 18, u. 1888, Nr. 44 u. 45.

—Bitemporale Hemianopsie. Wiener medic. Wochenschrift 1887, S. 336.

78. Verrey.—Hémiachromatopsie droite absolue; conversation partielle de la perception lumineuse et des formes; ancien kyste hémorrhagique de la partie inférieure du lobe occipital gauche. Arch. d'Ophth. VII, S. 289. 1888.

79. Sachs.—Arbeiten aus der psychiatrischen Klinik in Breslau, Heft 2.

80. Roux.—Des rapports de l'hémianopsie latérale droite et de la cécité verbale. Thése de Lyon. 1895.

81. Peters.—Ueber die Beziehungen zwischen Orientirungsstörungen und ein- und doppelseitiger Hemianopie. Archiv f. Augenheilkunde, Bd. 32, 3, S. 175. 1896.

82. Brandenburg.—Homonyme rechtsseitige Hemianopsie mit Alexie und Trochlearislähmung. Archiv f. Ophthalmologie, Bd. 33, Abth. 3, S. 92. 1887.

83. Naunyn.—Ueber die Localisation der Aphasie. Verhandlungen des VI. Congresses f. innere Medicin zu Wiesbaden 1887.

84. Rath.—Beitrag zur Symptomenlehre der Geschwülste der Hypophysis cerebri. Archiv f. Ophthalmologie, Bd. 34, Abth. 4, S. 81. 1888.

85a. Mauthner.—Gehirn und Auge. Wiesbaden 1881.

b. —Zur Casuistik der Amaurose. Oesterr. Zeitschr. f. prakt. Heilkunde, 18, Nr. 11, 20, 24, 26, 39,

86. Knapp.—Hemiopic and sectorlike defects on the field of vision and their connection with diseases of the head and brain. Archiv of sc. and pract. med. 1873, Nr. 4.

87. Philipps.—Reports of cases. The Royal London Ophthalmic hosp. Rep. 1889 part IV.

88. Chevallereau.—Two cases of hemianopsia following uterine haemorrage. The medic. Bulletin 1890. Hirschberg's Centralbl. 1890, S. 548.

89. Remak.—Basale Hemianopsie. Neurolog. Centralbl. 1890, Nr. 5.

90. Veronese.—Casuistische Mittheilung über einen Fall von plötzlicher Erblindung bei normalem ophthalmoskopischen Befund. Wiener klin. Wochenschr. 1890, Nr. 24.

91. Basevi.—Contributo allo studio dell' anopsia corticale. Morgagni. 32, S. 322. Milano 1890.

92. Oppenheim. Zur Kenntniss der syphilitischen Erkrankungen des Nervensystems. Berlin 1890.

93. William.— A case of hemianopsia. Ophth. Review 1890, S. 368.

94. Lewis.—Brachio-facial monospasm, following probable embolism. Journ. of nerv. and mentol disease, Nr. 11, 1890.

95. Déjérine, J. Sollier et E. Ascher.—Deux cas d'hémianopsie homonyme par lésions de l'écorce du lobe occipital. Arch. de physiologie norm. et pathol. II, S. 177. 1890.

96. Wollenberg.—Zwei Fälle von Tumor der hinderen Schädelgrube. Archiv f. Psychiatrie u. Nervenkrankheiten, 21, S. 788. 1890.

97. Delépine.—Hemianopsia with softening of the left cuneus. Brit. med. Journ. I, S. 1194. 1890.

98. Faravelli.—Emianopsia omonima destra d'origine traumatic. Arch. d'ottalmologia XX, S. 431. 1891.

99. Hertel.—Chronische Bleivergiftung: linksseitige homonyme Hemianopsie. Vollkommene Heilung. Charité-Annalen, Bd. XV. 1890.

100. Snell.—Immediate loss of sight of both eyes after injury to head. Brit. med. Journ. 1891, 11. Juli.

101. Preston.—Two cases of homonymous hemianopsia. Med. Record. 1891, 4. July.

102. Leyden.—Hemianopische Pupillenreaction. Verein f. innere Medicin. 19. Juni 1891. Beitrag zur topischen Diagnostik der Gehirnkrankheiten. Berlin. Referat im Centralbl. f.

prakt. Augenheilkunde 1891, S. 214, u. Nagel's Jahresber. 1891, S. 485,

103. Noyes.—Hemianopsia. Med. Record 1891, 4. April.
104. Hirsch.—Beitrag zur Chirurgie des Occipitalhirns. Dissertation. Würzburg. 1891.
105. Mayer.—Ueber zwei Fälle von Tumor cerebri. Dissertation. Berlin 1891.
106. de Schweinitz.—A case of homonymous hemiopic hallucinations, with the lesions of the right optic tract. New York med. Journ. 1891, 2. Mai.
107. Nettleship.—Ophthalmological Society of the United Kingdom. 12. Nov.1891. Brit. med. Journ. März 21, 1896.
108. Pflüeger.—Hémianopsie bilatérale temporale dans un cas d'acromégalie. Revue générale d'ophthalm. 1892, Juli.
109. Peters.—Hemianopsie nach Schädelfractur. Deutsche medic. Wochenschr. 1891, Nr. 38.
110. Schulze, Fall 21 bei Arnold.—Acromegalie etc. Ziegler's Beiträge zur patholog. Anatomie etc., X. Bd. 1891.
111. Boltz.—Ein Fall von Acromegalie mit bitemporaler Hemianopsie. Deutsche medic. Wochenschr. No. 27. 1892.
112. Asmus.—Ein neuer Fall von Acromegalie mit temporaler Hemianopsie. Archiv f. Ophthalmologie, Bd. 39, Abth. 2, S. 229. 1893.
113. Charpentier.—De la vision avec les diverses parties de le rétine. Thèse des Paris 1877.
114. Eperon.—Hemiachromatopsie. Archiv d'Ophthalmol. 1884.
115. Swanzy.—Case of hemiachromatopsia. Transactions Ophthalmolog. Society III. 1883.
116. Schöler.—Casuistische Beiträge zur Lehre von der Hemianopsie. S. 60, in Schöler u. Uhthoff, Beiträge zur Pathologie des Sehnerven etc. Berlin 1884.
117. Verrey.—Hémiachromatopsie droite absolue; conversation partielle de la perception lumineuse et des formes; ancien kyste hémorrhagique de la partie inférieure du lobe occipital gauche. Archiv d'ophthalmol. VIII. S. 289. 1888.
118. Vossius.—Ein Fall von bilateraler temporaler Hemianopsie, Archiv f. Ophthalmologie, Bd. 30, Abth. 3, S. 157. 1884.
119. Wiethe.—Ein Fall von plötzlicher Amaurose mit nachfolgender Hemianopia homonyma superior. Archiv f. Augenheilkunde, Bd. 13. S, 387. 1884.
120. Edinger.—Deutsche Zeitschr. f. Nevenheilkunde I, S. 265.
121. Hoche.—Archiv f. Psychologie, Bd. 23 (citirt von Knies).
122. Brasche.—Ein Fall von linksseitiger Hemiplegie, begleitet von linksseitiger homonymer lateraler Hemianopsie u. Hemianästhesie. Centralbl. f. prakt. Augenheilkunde 1892, S. 538.
123. Gonzenbach.—Zur Lehre von der einseitigen Amaurose. Dissertation. Basel 1891.
124. Hoeslin.—VI. ärztlicher Bericht der Curanstalt Neuwittelsbach. Ref. in Nagel's Jahresber. 1892, S. 530.
125. Goldscheider und R. F. Müller.—Zur Physiologie und Pathologie des Lesens. Zeitschr. f. klin. Medicin, Bd. 23, 1 u. 2, S. 131. 1893.
126. Beyer, Ueber déviation conjuguée bei Gehirnkrankheiten. Halle 1892.
127. Hermann, Stauungspapille nach Zahnextraction. Centralbl. f. prakt. Augenheilkunde, 1893, S. 366.
128. Mével, Contribution à l'étude des troubles oculaires dans l'acromégalie. Tèse de Paris, 1894.
129. Adelheim, Ein Fall von Hemianopsie horizontalis inferior bilateralis. Auto-Referat in Nagel's Jahresber. 1894, S. 566.

130. Bruns, Ein neuer Fall von Alexie mit rechtsseitiger homonymer Hemianopsie, mit Sectionsbefund etc. Neurolog. Centralbl. 1894, S. 1.

131. Pic, Tumeur du lobe occipital avec hémianopsie. Recueil d'ophthalm. 1894, S. 435.

132. Callan, Sudden monocular blindness lasting two months without ophthalmoscopic changes, autopsy. New York Eye and Ear Inform. Report, II, S. 24.

133. Ewetzky, Recidivirende amaurose mit nachfolgender Hemianopsia temporalis. Centralbl. f. prakt. Augenheilkunde 1895, S. 265.

134. Peretti, Hemianopsia bitemporalis traumatica etc. Festschrift zur Feier des 50jährigen Jubiläums des Vereins der Aerzte des Regierungsbezirkes Düsseldorf. Wiesbaden 1894.

135. Eales, A case of binasal hemianopia, The Ophthalmic Review 1895, July.

136. Grôsz, Durch ein wurmabtreibendes Mittel verursachter Fall vollständiger Erblindung. Centralbl. f. prakt. Augenheilkunde 1895, S. 41.

137. Knut Pantoppidan, Ophthalmo neurologiske Aforiner on Hemianopsi. Centralbl. f. prakt. Augenheilkunde 1895, S. 554.

138. König, Transitorische Hemianopsie und concentrische Gesichtsfeldeinengung bei einem Falle von cerebraler Rindenlähmung. Deutsche medic. Zeitung 1895, Nr. 23.

139a. Lancy, Hémianopsie avec hallunciations dans le partie abolie du champ de la vision. Revue neurolog. 1895, 5.

139b. Dercum, Tumor of the thalamus, more especially of the pulvinar, presenting Wernicke's pupil reaction. Journ. of nerv. and mental diseases, T. 15, S. 506, 1890.

140. Friedr. Müller, Ein Beitrag zur Kenntniss der Seelenblindheit. Archiv f. Psychiatrie, Bd. 24, 3, 1895.

141. Sachs, H., Vorträge über Bau und Thätigkeit des Grosshirns, und die Lehre von der Aphasie und Seelenblindheit. für Aerzte und Studirende. Breslau 1894.

142. Gaffron, Ein Fall von doppelseitiger Hemianopsie. Beiträge zur Augenheilkunde von Deutschmann. Bd. 1, Heft. 5, S. 59.

143. Brückner, Ein Fall von doppelseitiger Hemianopsie mit Erhaltung eines kleinen Gesichtsfeldes nach complicirter Schädelfractur in der Gegend des Hinterhauptbeines. Dissertation. Giessen 1896 (aus der Universitäts-Augenklinik von Vossius).

144. Jocqs, Hémianopsie double avec conservation de la vision centrale. Congrès de la Société francaise d'ophthalmologie 1894. Arch. d'ophthalmol. Bd. 14, S. 443.

145. Siemerling, Ein Fall von sogenannter Seelenblindheit nebst anderweitigen symptomen. Archiv f. Psychiatrie, Bd. 21, S. 222. 1889.

146. Freund, Ueber optische Aphasie und Seelenblindheit. Archiv f. Psychiatrie, Bd. 20, S. 276. 1889.

147. Lissauer, Ein Fall von Seelenblindheit nebst einem Beitrage zur Theorie derselben. Archiv f. Psychiatrie, Bd. 21, S. 222. 1889.

148. Ebstein, Traumatische Neurosen und Diabetes mit besonderer Berücksichtigung des Unfallversicherungsgesetzes. Deutsches Archiv f. klin. Medicin, 2. u. 3. Heft, 1895.

149. Weiss und Goerlitz, Ein Fall von einseitiger Erblindung und Diabetes nach schwerem Trauma. Archiv f. Augenheilkunde, Bd. 31, S. 407. 1895.

150. Holden, Ueber Hemiachromatopsie und das Fehlen eines gesonderten Farbencentrums. Archiv für Augenheilkunde, Bd. 32, S. 139. 1896.

151. Peltzer, Eigenthümlicher Fall von embolischer Erblindung. Berliner klin. Wochenschr. 1872, Nr. 47.

152. Listing, Nervöses Scotom. Monatsbl. f. Augenheilkunde V, 1867, S. 336.

153. Airy, On a distinct form of transient hemiopsia. Philos. transact. London, V. 140, 1. S. 247. 1870.

154. Förster, Ueber Amaurosis partialis fugax. Klin. Monatsbl. f. Augenheilkunde 1869, S. 422. Discussion. Schirmer, Mannhardt.

155. Wollaston, On semidecussation of the optic nerves. Philos. transactions, 1824, I, S. 222.

156. Allgemeinleiden und Veränderungen des Sehorgans, S. 122.

157. Hutchinson, Additional particulars of a case of Xanthelasma palp. with blindness of one eye. Ophthalm. Hosp. Rep. VIII, S. 56, 1874.

158, Albutt, Derangements of vision and their relation to migraine. Nagel's Jahresber. 1874, S. 452.

159. Manz, Ueber das Flimmerscotom. 18. Wanderversammlung der südwestdeutschen Neurologen u. Irrenärzte, 1893.

160. Kums, Observations de photopsie périodique. Annal de la Société méd. d'Anvers. Mars 1872.

161. v. Reuss, Casuistische Beiträge zur Kenntniss des Flimmerscotoms. Wiener medic. Presse Nr. 1—12. 1876.

162. Hilbert, Zur Pathologie des Flimmerscotoms. Centralbl. f. prakt. Augenheilkunde 1891, S. 330.

163. v. Schroeder, Ueber bleibende Folgeerscheinungen des Flimmerscotoms. Klin, Monatsbl. f. Augenheilkunde 1884, S. 351.

164. Strehl, Zur Casuistik des Flimmerscotoms. Mittheilungen aus der königl. Universitäts-Augenklinik zu München 1882, Bd. 1.

165, Charcot, Lecons. 1879, S. 77.

166. Ch. Féré, Contribution a l'étude de la migraine Ophthalmique. Revue de médecine 1881, Nr. 8.

— Note sur un cas de migraine ophthalmique a accès répétés et suivi de mort. Eod. loco 1883, S. 194.

167. Galezowski, Quelques mots sur la migraine ophthalmique et sur la valeur séméiologique. Rec, d'Ophthalmol. 1883, S. 536.

168. R. Berlin, Ueber dyslexie. Vortrag auf der Versammlung südwestdeutscher Neurologen und Irrenärzte am 17. Juni 1883. Baden-Baden.

— Vortrag auf der XI. Versammlung südwestdeutscher Neurologen. 1886.

— Eine besondere Art der Wortblindheit (Dyslexie). Wiesbaden 1887.

169. Nieden, Ein Fall von Lesescheu, Dyslexie (Dysanagnosie) und Sectionsbefund. Archiv f. Augenheilkunde, Bd. 17, S. 162. 1887.

170. Sommer, Die Dyslexie als functionelle Störung, Archiv f. Physiologie u. Nervenkrankheiten, Bd. 25, 3, S, 663. 1893.

171. Bruns, Ein Fall von Dyslexie mit Störungen der Schrift, Neurolog. Centralbl. 1888, Nr. 2.

172. Shaw et Thomson, Dégénérescence descendante a la suite de lésions de l'écorce du lobe occipital chez le singe. Annal. d'oculistique, Bd. 116, S. 284. 1896. (Es gehen, abgesehen von den bekannten Wegen, auch degenerirte Fasern zum Pedunculus cerebri und zum entgegengesetzten Occipital-

lappen bei Verletzungen der Rinde des einen Occipitallappens.)

173. Lannois et Jaboulay, L'hémionopsie dans les abscès cérébraux d'origine otique. Revue hebd. de laryngologie etc., Nr. 23, 1896,

174. Marina, Ueber multiple Augenmuskellähmungen und ihre Beziehungen zu den sie bedingenden, vorzugsweise nervösen Krankheiten. Leipzig und Wien 1896.

175. Dufour, Sur la vision nulle dans l'hémiopie. Revue méd. de la Suisse rom. IX, S. 445. 1889.

176. Bayer, Ueber Verlagerungeu im Gesichtsfeld bei Flimmerscotomen. Neurolog. Centralbl. 1895, Nr. 1 u. 2.

177a. Castellino, Ueber die Function der Thalami optici. Wiener medic, Wochenschr. 1895, Nr. 32.

177b. Siegrist, Beiträge zur Kenntniss vom Wesen und Sitz der Hemicrania ophthalmica. Basel und Leipzig 1894.

178. Benson, Case of Akromegaly with ocular complications. Brit. medic. Journ. 19. Oct. 1895.

179. Flechsig, Ueber die Projections- und Associationsbahnen im menschlichen Gehirn. Ref. im Fortschritte der Medicin 1896, Nr. 13.

180. Chabbert, Sur un cas d'ophthalmoplégie nucléaire transitoire consécutive à une migraine ophthalmique. Ophthalmophlégie migraineuse. Le Progrès médical 1895, Nr. 15.

181. Schmidt-Rimpler, Ueber maculare Sehnervenatrophie bei Diabetes. Bericht der Ophthalmolog. Gesellschaft zu Heidelberg 1896, S. 99.

182. Mendel, Hemianopsia heteronyma temporalis bei Akromegalie. Berliner klin. Wochenschr. 1895, 30, Dec.

183. Nothnagel, Ein Fall von plötzlicher Erblindung. Wiener medicin. Blätter 1888, Nr. 20.

184. Yamagiwa, Beitrag zur Aetiologie der Jackson'schen Epilepsie. Virchow's Archiv, Bd. 119, Heft 3, S. 447. 1890.

185. Wilbrand, Ueber die Gesichtsfeldmessung am Dunkelperimeter. Monatsschr. f. Psychiatrie u. Neurologie, Bd. 1, Heft 1, S. 41. 1897.

— Die Erholungsausdehnung des Gesichtsfeldes unter normalen und pathologischen Bedingungen. Wiesbaden 1896.

186. v. Graefe, Bemerkungen über Glaucom etc, Archiv f. Ophthalmologie, Bd. 1, Abth. 2, S. 300. 1855.

187. A. Schirmer, Amaurosis nach Blepharospasmus. Klin. Monatsbl. f. Augenheilkunde, Bd. 17, S. 349. 1879.

188. Leber. Vorübergehende Blindheit nach lang anhaltendem Lidkrampf bei phlyctaenulärer Keratitis kleiner Kinder. Archiv f. Ophthalmologie, Bd. 26, Heft 2, S. 261. 1880.

189. Samelsohn, Ueber Erblindung nach Blepharospasmus. Berliner klin. Wochenschr. 1888, 23. Januar.

190. Silex, Vorübergehende Amaurose in Folge von Blepharospasmus nebst einigen Bemerkungen über das Sehen der Neugeborenen. Klin. Monatsbl. f. Augenheilkunde, Bd. 26, S. 104. 1888.

191. Uhthoff, Ein Beitrag zur vorübergehenden Amaurose nach Blepharospasmus bei kleinen Kindern. Verhandl. der Gesellsch. zur Beförderung der Naturwissenschaften in Marburg, Sitzung vom 9. Dec. 1891.

192. Schweigger, Ueber den Zusammenhang der Augenheilkunde mit anderen Gebieten der Medicin. Festrede. Berlin 1885.

193. Rabinowitch, Zeitweilige Blindheit nach Blepharospasmus. Centralbl. für prakt. Augenheilkunde. 1892, S. 30.

194. Leonowa, Beiträge zur Kenntniss der secundären Veränderungen der primären optischen Centren und Bahnen in

einem Falle von congenitaler Anophthalmie und Bulbusatrophie beim neugeborenen Kinde. Archiv f. Psychiatrie, 28. Bd., Heft 1. 1896.

195. Bull, Atrophie optique durant la grossesse. Annal d'oculistique, Bd. 108. S. 286. 1892.

196. Massaut, Experimentelle Untersuchungen über den Verlauf der den Pupillenreflex vermittelnden Fasern. Archiv f. Psychiatrie u. Nervenkrankheiten, Bd. 28, S. 432. 1896.

197. Antonelli, L'Amplyopie transitoire. Contribution à l'étude des troubles visuels dans les maladie nerveuses. Arch. de Neurologie 1896, Nr. 71 u. 72 (enthält auch Literaturangabe.)

# LESIONS OF THE FRONTAL SINUS AND ANTERIOR ETHMOIDAL CELLS AND THEIR SURGICAL MANAGEMENT

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The inaccessibility of the air-spaces of the skull, as well as the rarity with which these cavities become affected, have rendered the diagnosis of such lesions to some extent, difficult and the surgical measures undertaken for their relief, more or less unsatisfactory. In the attempt to clear up this rather obscure field, general, ophthalmic, rhinologic and oral surgery have each, during recent years especially, contributed a certain share towards a better knowledge and understanding of the lesions which invade these spaces. This has led to a more rational and eminently more satisfactory surgery.

That ophthalmic surgery has contributed important diagnostic, as well as many practical suggestions directing a more successful management of these cases, is due to the intimate topographical relationship of the anterior ethmoidal cells and the sinuses of the frontal bone with the margins, cavity and contents of the orbit. The fact must also be admitted that in lesions of this class (which include those of the maxillary sinus as well and also the still more uncertain lesions of the sphenoidal sinus) ocular and orbital symptoms are often the most conspicuous features which are present and even if less conspicuous, they may happen to be the only evidences by which the origin and seat of the disturbances which develop, can be traced to these concealed recesses of the skull.

It is of interest to note that Mackenzie in his classical work on Diseases of the Eye, gave a lucid description and anticipated the exploration and opening of all the sinuses (even the sphenoidal) for diagnostic and surgical purposes.

The literature of general surgery also contains frequent reference to this subject.* It was not until more recent years, however, that the extensive anatomical and pathological researches of Kuhnt (1), Luc (2), Derrien (3), Fraenkel (4) and especially the exhaustive investigations of Zuckerkandl (5), aroused renewed interest in the affections of the frontal sinus and its accessory cavities.

These anatomical researches have fully corroborated what has long been accepted, that the frontal sinus is absent at birth. The real sinus-cavities whose function like that of the ethmoid cells and maxillary sinus, is mainly to lessen the weight of the forepart of the skull and to add resonance to the voice, appear during the first year of life. During early life, they remain of small dimensions and develop only very slowly. It must not be assumed, however, that during this period the frontal sinus is not the seat of disease. On the contrary, in early life and infancy, we not infrequently meet with lesions of the frontal sinus and its anterior ethmoidal cells, although the former is present only as an interspace and the latter are small, but in free communication with the sinus. In these cases, the anterior cells adjacent to the frontal sinus and in some instances even those communicating with it, are commonly affected. The walls are so thin that the contents are extruded into the small cavity of the sinus and are either discharged (among symptoms resembling local periorbitis) into the nose or become incarcerated, followed by inspissation or even, as in a case under my observation, by periostosis of the affected region.

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*Even in the early history of surgery, isolated instances of operations on the sinuses occur and Morgagni relates that the frontal sinus was opened and a worm removed by Cesar Magatus, a surgeon of Bologna. Occasional mention of the limited external operation is also found during the last century. In the earlier part of the present century, Dezeimeris published a comparatively important treatise on this subject and somewhat later, Bouyer added some interesting histological and pathological results.

(1) Kuhnt:—Die Entzuendlichen Krankheiten der Stirnhoehlen.

(2) Luc:—L'Etude des Suppurations des Sinus frontal.

(3) Derrien:—Etude sur L'Empyeme des Sinus frontal. Thèse Paris.

(4) Fraenkel:—Beitrag zur Pathologie und Aetiologie.

(5) Zuckerkandl:—Anatomie der Nasenhoehle.

See also, Lothrop: Anatomy and Surgery of the Frontal Sinus, a recent work which came under my notice while this article was in preparation.

At puberty, owing to the recession of the brain, the sinuses undergo considerable enlargement. In advanced life, owing to the absorption of the cancellated tissue in their vicinity, they sometimes undergo perceptible increase of dimensions. They are relatively larger in the adult male than in the female and the sinus on the left side is commonly the larger of the two. Variation in size is marked in different individuals and in rare cases, the sinus attains an enormous size, a dilation which generally must be looked upon as purely physiological, although a latent pathological process cannot always be excluded. Occasional anomalies of shape and structure (such as a poorly developed or abortive sinus with the absence of the vertical portion) are occasionally met with, but the complete absence of one or both sinuses is exceedingly rare*

In the search for the various causes which are responsible for lesions of the frontal sinus and anterior ethmoidal cells, it will be found that traumatism plays a not infrequent role. Fractures of the walls of the frontal sinus occasionally occur, and may lead to infective and obstructive processes. In these cases, it has happened that the secretion from the sinus has been mistaken for a discharge from the cranial cavity. A curious emphysematous condition of the eyelids, scalp and face sometimes also makes its appearance, a phenomenon which is due to the forcing up and escape of the air through the fronto-nasal canal and under the overlying soft tissues of the brow and frontal region. Foreign bodies also may lodge in the sinus. In rare instances, calculi composed mostly of lime may be formed within the sinus-cavity. Bullets, projectiles of all kinds, knife-blades, scissors broken off in their passage through the skull, may also become arrested and lodge here. The most interesting feature in this connection, however, is exhibited by foreign bodies which gain admission to the sinus by the natural channels. Reference is here made to the introduction of the ova of insects, maggots, etc., which are deposited on the mucous membrane of the nose or may be inhaled from flowers and fruits.*

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*Race is also a factor in sinus-develpment. The sinuses in Europeans are larger than in negroes and they are very imperfecty develop ed in Australians,—a deficiency to which some attribute the peculiar lack of vocal resonance in this race. It is of interest to note that the air-cells admit of much higher development in certain mammals and birds than in man. This applies especially to the ruminant and some other quadrupeds where the sinuses extend backwards over the top of the skull and penetrate the cores of the horns in oxen, antelopes and sheep. The elephant, however, according to Prof. Owen, presents the most remarkable development of air-cells:—"the intellectual physiognomy of this huge quadruped being caused, as in the owl, not only by the actual capacity of the brain-case, but by the enormous extent of the pneumatic cellular structure between the outer and inner plates of the skull.'

As a rule, inflammatory states of the frontal sinus and its connecting air-spaces, are due to local causes. General and systemic infection, however, not infrequently occurs. The part which syphilis plays in chronic sinus-affections has long been recognized. But recent researches in pathology and bacteriology (especially the investigations of Weichselbaum and Fraenkel) prove conclusively that acute systemic disease not infrequently attacks the sinus-cavities. In 146 autopsies made by Fraenkel in acute disease (scarlet-fever, diphtheria, influenza, cerebro-spinal meningitis, etc.) he found the sinuses affected in 63 cases, the frontal sinus being least commonly and the maxillary sinus most frequently involved.

As regards the more common local causes, it will be found that inflammation of the frontal sinus may be due (1) to the transplantation of pyogenic products from the adjacent nasal cavity, or, in less frequent cases (2) to the direct extension (along the mucous lining or bony walls) of intra-nasal disease by way of the connecting channel or frontal canal.

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*In India where this disease of the sinus is known as "Peenash," this exciting cause is quite common and the progress of the affection is marked by a pronounced muco-purulent discharge and often results in a necrotic and gangrenous condition of the eyeball, the bones of the face and the soft parts. Centipedes have also been found in the frontal sinus and according to Fraenkel "may remain there a number of years, the secretion of the cavities furnishing them sufficient nourishment." In a case reported by Gross, a child lost its life by the development of a large number of spiders," the parent-spider being most probably inhaled while the patient was smelling a flower."

The symptoms in the rare cases of acute sinus-inflammation do not differ materially from those accompanying the formation of pus in other closed cavities of the body. More or less fever at the onset, rigors, local swelling and edema, constant, severe and increasing pain unrelieved by anti-neuralgics, together with the previous history of an acute coryza, generally point conclusively to empyema of the frontal sinus. In some instances, the morbid process is brought to a close by the rupture of the sinus into the orbit or by the escape of the imprisoned pus into the nose, but in a typical case of empyema anything short of immediate surgical interference, means to invite cerebral complication and other serious sequelae (caries and necrosis of the walls of the sinus, etc.,).

In taking up the consideration of the chronic lesions of the sinus, it must be stated that, for an indefinite period, such lesions, or their final expressions, may run an entirely latent course both as far as local and constitutional disturbances are concerned. The low grade of inflammatory activity which commonly attends such processes and the compensatory hypertrophy or sclerosis of the walls which is hereby excited, combine to decree for the incarceration of pyogenic matter, granulation-tissue, inspissated pus, etc., an almost latent course with uncertain or absent clinical features.

Among the first tangible evidences is a diffused local tenderness of the upper marginal region of the orbit, without redness or swelling over the affected region. This is generally unilateral as it is rare to find both cavities affected at the same time. This gives way to transitory, painful swelling of the periosteum and bone, often with redness and swelling of the overlying soft parts. These symptoms come and go, lasting generally several days or weeks. Headache now becomes general. At the same time, there will be observed a characteristic indication, and this is, a change of contour of the inner, upper and in some cases even, of the inferior margin of the orbit. If the lesion is unilateral, and it generally is, the asymmetry of this important part of the face and the change of physiognomy which it entails, point with significance to an existing sinus-lesion. If tenderness on pressure or percussion is present, it is even more suggestive of this view.

The most careful rhinoscopic examination fails to disclose more than a chronic catarrhal process which is known to have been present and to which also the symptoms due to the sinus-complication are assigned. In some cases even, the symptoms of an existing nasal lesion are in abeyance during the progress of the sinus-lesion.

If the grade of inflammatory activity remains low, it may happen that a chronic empyema may undergo partial absorption or inspissation and terminate in a contraction of the cavity with increased thickening of the walls; in other words, hyperostosis results. It may also happen at this stage, or with the presence of the symptoms referred to, that a spontaneous evacuation through the fronto-nasal canal into the nose effects, in some cases, temporary arrest, and in a few, termination of the sinus-lesion. In exceptional cases, in which hyperostosis of the walls takes place and recovery without external perforation results, there may come about as a remote sequence, neuralgic seizures of extraordinary severity and duration. A more frequent result, however, is the yielding of the walls at one or another point. In children, this is not infrequently the temporary angle of the sinus, but with them and with adults it is more often the lateral or orbital walls at a point near or even below the inner canthus of the eye.

The periorbita in this locality is firmly attached to the bone and is furthermore reenforced by the orbital fasciae and medial ligament and this explains the resistance which is offered to the burrowing pus. For this reason, the dissecting trail is often deflected and pushes its obstructive work lower down while its most frequent outlet is under and at the outer or temporal border of the tear-sac. Not infrequently, several fistulous openings discharging the contents of the sinus frontalis appear along the orbital margin near the middle or even its outer division. They may also undermine the periosteum tear-sac, erode the os unguis and superior maxillary of this region and without external perforation, discharge their contents into the nose. In particular do we observe this in broken-down syphilitic subjects. In such cases, both internal and external perforation is likely to take place.

The earliest ocular manifestations* are observed on the part of the eyelids. A serous infiltration of the loose cellular fasciae of the roof of the orbit dependent upon and associated with the transitory exacerbations of the insiduous sinus-lesion, may interfere with the action of the levator muscle of the upper lid and also with the superior rectus muscle. Drooping of the upper lid and slight restriction of motion upwards is often observed. Proptosis due to the same cause and lateral displacement of the globe may also be present even at this early period. To these symptoms are added an edema of the inner third of the upper lid with dusky discoloration. This is, in some cases, so much like the inflammatory edema and tissue-infiltration which attend a suppurating chalazion, for which it is not infrequently mistaken. On the part of the conjunctiva,—especially the retrotarsal and ocular divisions,—engorgement of the venous channels, and frequently, chemosis are observed. This is not of inflammatory origin, but is due to obstruction of the outflow of the venous channels. In some cases, the upper fornix at this point is evulsed. Pus-trails may cause this and discharge their contents into the conjunctival sac.

The symptom of proptosis is a variable one and is not in conspicuous evidence even in pronounced cases of uncomplicated frontal sinus-disease. In those cases in which a necrosing syphilitic lesion invades the ethmoidal cells and frontal sinus jointly, or all the pneumatic cavities are involved, this is almost uniformly present.

A feature of the exophthalmos accompanying sinus frontalis disease, deserves mention. In common with similar processes of the ethmoidal cells it is subject to great variation. At times it is present and again it disappears entirely. In most exceptional cases only, in which perforation under the periosteum takes place behind the orbital margin and insertion of the orbital fasciae and medial ligament and the dissecting trails push backward towards the apex of the orbit, is dislocation of the eye a necessary effect and exophthalmos a conspicuous symptom.

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*The Ocular and Orbital Symptoms of Lesions of the Frontal Sinus." (Medical News, Aug., 1899.)

The successful treatment of sinus-lesions is almost exclusively surgical. In acute cases, of course, the clinical picture is so unmistakeable that there can be little or no question except to open the sinus and relieve it as speedily as possible. In chronic suppuration of the frontal sinus, if spontaneous discharge has taken place into the nose along the natural channels or a fistulous tract has forced an opening externally or into the adjacent cells of the ethmoid or even into the maxillary sinus, the indications for operation are many. Such chronic lesions may manifest themselves by (1) indefinite or absent clinical features, with or without the history of an antecedent nasal lesion (2) the presence of a transitory swelling of the overlying soft parts and bone, which has been recurrent but which because of absence of pain is not regarded with apprehension by patient or surgeon; (3) transitory swelling of this region with unmistakeable peri or hyper-ostosis with or without pain, as in syphilitic subjects; (4) recurrent neuralgia of excessive intensity and duration dependent probably upon mysterious impulses originating in the sinus (5) the growth of osteophites or exostosis.

In former years, frequent attempts were made to effect drainage and establish communication with the nose by forcing a passage through, or re-establishing the closed or occluded fronto-nasal canal. It is not difficult to recognize that the internal operation (either by probe, irrigation-canule or by puncture of the floor of the sinus) presents many difficulties and disadvantages. In the first place, as has been established recently, it frequently happens that there is no naso-frontal canal or no communication with the nose, or, on the other hand, a communication with the anterior ethmoidal cells is present. In addition to this, anatomical and physiological variations of size, direction and location of the nasal canal or the existing ostia are so common, and pathological alterations are so numerous and misleading, that the possibility of establishing successful communication has been disputed by many operators and even when it is said to have been accomplished, the result has usually been of questionable value. Moreover, autopsical and clinical evidences * are conclusive that it is among the rarest occurences to find an uncomplicated suppurative process of the sinus frontalis. In the vast majority of cases, the adjacent anterior ethmoidal cells are also invaded, the choked contents of the frontal sinus, owing to impenetrable occlusion of the fronto-nasal canal, having eroded the lateral or posterior wall and discharged into one or several of the adjacent cells of the ethmoid. It is admitted that the anterior ethmoidal cells on account of their location and the danger of complications, are almost inaccessible to intra-nasal interference, while the cells generally affected in sinus-disease (those adjacent to and along the floor of the frontal sinus) are altogether out of the reach of successful intra-nasal surgery. So that, even where the anatomical and pathological hindrances are not insurmountable, the internal operation is generally productive of little or no good, and, is in addition, unsurgical and dangerous.

The surgical methods which enable us to explore the sinus frontalis from without for diagnosis and successful treatment are, at present, so satisfactory that few surgeons attempt drainage or exploration through the intra-nasal opening. Many surgeons have long since abandoned the internal operation as uncertain and unsatisfactory and resort almost exclusively to the external one. Trephines and dental drills are preferred by some surgeons, but the simplicity and ease of the manipulation of chisel, gouge and mallet, entitle these instruments to the preference. Even if spontaneous rupture has taken place as evidenced by fistulae in or near the region of the inner canthus, the opening of the sinus should first be made and subsequently

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*Luc and Jansen found frontal empyema almost invariably associated with the same disease in the anterior ethmoidal cells. "Zuckerkandl with an enormous experience, never observed a case of suppuration in the frontal sinus uncomplicated by ethmoidal disease. E. Fraenkel performed 146 autopsies and did not find a single uncomplicated frontal empyema." (Quoted by Lothrop.)

the fistulous tracts can be incised, curetted or obliterated. Because of the deep burrowing of the pus and its final discharge through a cutaneous opening, the track is under the tear-sac and careless interference may result in greater harm.

A free incision is made within, or even a little above, the eyebrow. This follows the arch of the upper bony margin and is carried to the median line on the nose and extended downwards to a point a little below the inner canthus. Frequently, in order to have an unobstructed field, a second incision is made, at right angles to the first and over the supposed site of the sinus. The skin being held apart by retractors and the periosteum being pushed aside, with the aid of drill, or by careful chiseling, an opening is made which permits examination of the sinus. At this point, we have frequent opportunities to notice the greatest aberration so far as thickening and thinning of the bone is concerned, anomalous conditions in which individual and constitutional peculiarities play an important role.

If there are pertinent reasons for more extensive interference, for instance, if the sinus is choked with granulation-tissue, pus, or other pyogenic products, it is freely opened. The sinus being thoroughly explored and exposed, this is followed, if indicated, by an exploration of the adjacent ethmoidal cells. If no further indication of disease is found, an attempt should always be made to reopen communication with the nose through the natural channels. This is not always possible and if not easily accomplished had better be abandoned.

If no further exploration of the adjacent sinuses is deemed necessary, this terminates the operation and the subsequent treatment is like that of any other bone-cavity; packing with iodoform gauze and maintaining a free opening which subsequently is permitted to close or is closed by attempts at plastic surgery.

# VESICULAR KERATITIS FOLLOWING CATARACT EXTRACTION. REPORT OF A CASE.

By Edgar S. Thomson, M. D.,

NEW YORK CITY.

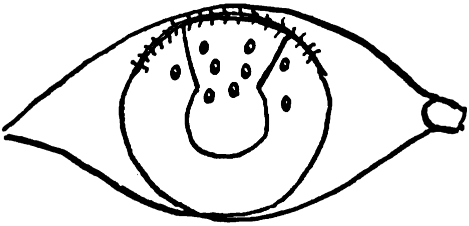
Mrs. A. F., 58, came to the Manhattan Eye and Ear Hospital Aug. 28th, 1897, for cataract extraction. Her previous personal history was very hard to obtain, but seemed to be good. She said she had been nearsighted for many years before the development of the cataract, which had been coming in the right for almost two years.

There was no history of inflammatory condition, lids and conjunctiva normal, pupil four mm. in diameter and freely movable, lens entirely opaque, tension normal, field good, projection accurate. R. V=P. L.

The left eye showed a similar condition except that the lens opacity was not so far advanced. L. V=16/200. Aug. 29th, a simple extraction was done under cocaine. The section was placed in the limbus and the operation was without complication. The iris went back rather slowly but a central, circular pupil was left, and a small amount of soft lens matter. She complained of some pain during the night and the following morning the iris was found prolapsed and covered with lymph. The reaction was very severe, the conjunctiva being deep red and there being slight chemosis. The anterior chamber was reformed through the stopping up of the wound by the iris. Dr. Webster was asked to see the case in consultation and advised atropine and iced cloths, so as to allow the reaction to subside before excising the prolapsed iris. This was done and the following day (Aug. 31st) the conjunctiva being much whiter and the chemosis having almost disappeared, the iris was carefully drawn out of the angles of the wound and excised. The anaesthetic used in this case was holocain.

The eye was left bandaged two days and although there was a slight return of the chemosis and redness, resolution kept steadily on, though slowly. She was treated with atropine and iced cloths, was discharged from the hospital five weeks after the extraction with the eye almost white, and the pupil filled with a dense membrane which ran up to the wound filling the coloboma. She came regularly to the clinic and the eye did well until Nov. 13th, when she came back complaining of pain in the eye and temple. There was marked ciliary injection and the tension was noticeably increased. The membrane in the pupil was less dense but seemed to fill the entire pupil and had several attachments to the margin of the iris. A needling was at once done and the membrane divided. There was slight reaction and the tension kept up for three days after the needling but subsided under instillation of 10% cocaine. After this she had no further increase of tension up to the time of her discharge from the clinic.

The eye rapidly quieted but the membrane, although divided, remained in position to obscure vision. December 16th she returned with slight pain and slight ciliary injection and a crop of nine or ten small vesicles on the upper part of the cornea. (Fig.) There was no increase of tension, the cornea was not anesthetic and the irritative symptoms were slight. There were numerous delicate vessels running across the scar of the original section from the limbus. The vesicles were rather oblong in shape and very small, as shown in the cut. They were apparently formed by effusions of serous fluid between the epithelium and Bowman's membrane, and there was not the slightest infiltration of the surrounding corneal tissue. Applications of hot water were orderd.



The vesicles remained unchanged for twelve days and then began to disappear. Dec. 30th only two were left. Jan. 4th the last remaining vesicle was punctured with a

Graefe knife and a little clear serum let out. The epithelium at once flattened down and no infiltration remained to show where the vesicle had been. In fact there never were any traces of the vesicles after they collapsed.

March 12th another needling was done, clear pupil resulting. March 24th, the eye was white, tension normal, a few floating vitreous opacities, and choroidal changes scattered over the entire fundus. Myopia of about 12 D. R V=20/200: accepts no glasses.

Cases of Vesicular Keratitis occuring after cataract extraction are certainly very rare. I have been unable to find much bearing on the subject. Fuchs (Text book of Ophthalmology, P. 168) describes rather in detail the formation of vesicles on the cornea and later on (P. 171) says that it occurs in rare cases "after cataract operation beneath the bandage." Several features rather different from Fuchs' description were presented by the above case. The lack of irritative symptoms was very noticeable; there was only slight pain and ciliary injection and no photophobia at all. There was no anaesthesia of the cornea. It is a well known fact that corneal vesicles, if small very quickly rupture, in many cases leaving strings of lymph and epithelium hanging from the site of the vesicles, the so-called filamentous kereatitis. However, in the case reported, the vesicles were present for twelve days. There certainly was no connective tissue formation in the anterior wall of the vesicles and it seems difficult to account for the great resistance of the corneal epithelium unless Bowmans membrane was involved, which seemed not have to been the case.

Fuchs says, (P. 170) "The cause of the formation of vesicles appears to lie in the abnormal conditions of the lymph circulation which are without doubt present in such eyes," (i. e. glaucomatous or phthisical). "By stasis of the lymph, edema of the cornea is produced; the edematous fluid penetrates forward until it gets beneath the epithelium, and then lifts the latter up in places from Bowmans membrane."

Whether or not the increased tension, present almost a month before the formation of the vesicles, was at all a causative factor in the case cited, I am unable to say positively. I am inclined, however, to think that it was.

16 East 43rd Str.

# A CASE OF REFLEX AMAUROSIS.

BY H. C. SLOGGETT, M. D.,

HONOLULU, H. I.

(READ AT THE MEETING OF HONOLULU MEDICAL ASSOCIATION, NOV. 4. 1899.)

Amaurosis, signifying loss of vision without perceptible ocular lesion, is divided into three grades:

1. Where there only dimness, called "Amblyopia."
2. Where there is only light perception.
3. Complete or absolute amaurosis or blindness.

The following case is unique in my experience, and in none of the reference books I have looked up is there allusion to such a case, except in the briefest way and in general terms of the whole group of cases known as Reflex Neurosis, with the exception of Swanzy, who in his chapter on Amblyopia and Amaurosis, page 417, 4th edition, writes as follows:—

> "Reflex Amblyopia is said to have been observed and chiefly in connection with irritation of the 5th pair, especially the dental branches, but I have not seen these cases and I am skeptical as to their occurrence. Carious molar teeth are said to be its frequent cause, usually with severe toothache, sometimes without: and it is nearly always most marked on that side."

This coming from Swanzy, with his immense experience, is evidence that such cases are indeed extremely rare, and justifies my reporting this case, which was as follows:—

Mrs. Gibbs, Hawaiian native, 36 years old, with an apparently good family history, applied to me for treatment at the Infirmary on Saturday, Oct. 14th last, making the following statement:—

Nine days previously (Oct. 5th) the patient noticed dimness of sight in left eye and dull, aching pain commenced at back of the eye. This pain yielding to hot water bathing of the eye and side of head, she did not apply for treatment though dimness of vision continued even when pain abated, but on return of the pain, of quite severe character and extending over left temporal region, she came to see me at the Infirmary Oct. 14th. Ophthalmoscopic examination without a mydriatic showed the fundus oculi to be normal in appearance; vision reduced to less than one-half with Snellen's test types, and misty; left conjunctiva congested and red.

On looking into patient's mouth I saw a lot of ragged stumps of the molars. Prescribed eye wash, Soda biborate gr. VIII to oz. of camphor water, also 5 grs. antipyrine three times a day and advised her to go to a dentist without delay. On the following Monday, Oct. 16th, patient came again to see me at Infirmary, stating the pain had ceased, but that left eye was now entirely blind. This I found was so, there not being the slightest light perception, even to strong electric light thrown on left eye. I now fully dilated with atropin and again examined with ophthalmoscope finding nothing in the fundus abnormal. Prescribed 10 grs. potassium iodid three times daily and sent patient with a note to Dr. Clark, dentist, whose report is attached to mine. Dr. Clark removed the stumps on Tuesday, at noon of Oct. 17th, and next day, Wednesday, patient called to see me, that though quite blind at time teeth were extracted, that her sight had come back after a good night's sleep on awaking in the morning.

I again examined with ophthalmoscope, pupil being still dilated by drops put in eye on the preceding Monday, P. M., finding fundus quite healthy and normal in appearance. Examination with perimeter showed visual fields also normal for all meridians. The patient brought a note from Dr. Clark which I give in full:—

OCT. 15, 1899.—Your patient, Mrs. Gibbs, came here yesterday with your note, and on examination, I found upper and lower wisdoms and 2d lower molars on the left side as well as upper wisdom and lower molar on right side to be dead teeth and very much broken down. I extracted these, which was fellowed by considerable hemorrhage, and on upper wisdom on left side I found remains of an abscess sac. The central incisors are also dead, and should come out. Yours truly,

E. E. CLARK, D. D. S.

Sight went again at noon of the 20th, when she came to me quite alarmed. I took her to Dr. Clark's office, when he extracted the two central incisors. On waking after a good night on the morning of the 21st, sight was again restored, and vision has continued normal up to this date Nov. 6th.

At no time has patient been conscious of toothache or pain in the teeth themselves, during the manifestation of these eye symptoms. I regard the rapid and complete loss of sight, and equally or more rapid restoration on removal of the cause of irritation, as a most striking and instructive lesson, not only to an oculist, but to all of the profession, whose attention is turned to the group of phenomena classed as Reflex Neurosis.

# ANISOMETROPIA AND NORMAL REFRACTION.

DR. CARL SCHULIN,

HELENA, MONT.

It is generally accepted that there is no rule governing occurrence of anisometropia. My records, however, seem to show that one rule at least can be with safety established and it is indeed surprising to me, that after a diligent search through literature on this subject I have been unable to find any one who noticed it before. This rule is;—Cases of anisometropia, which are not complicated with a great amount of astigmatism, have the right eye less hyperopic or more myopic then the left.

In a carefully compiled record of the vision and refraction of both eyes of one thousand persons of all ages, both sexes and of different nationalities, testing them again and again, more than ninety presented a high grade of hyperopia of different amount in either eye, and in all except four the left eye was more hyperopic than the right and these four exceptions—like all good exceptions—confirm the rule.

Case I. Mr. W. G. aet. 49. R. E. + 1.50, L. E. + O. The right eye is amblyopic and practically useless. He does all his reading etc. with the left eye.

Case II. Mr. J. L. aet 38. R. E. + 5.00, L. E. + 3.00, gives a history of internal strabismus of right eye and was operated upon ten years ago, and while both eyes appear straight he uses his left eye exclusively. His distant vision is: R. E. 20/60, L. E. 20/30, and he can read Jaeger No 1 with left eye without a lens, but with the right eye he can only read Jaeger No. 9, and requires a + 4.50 to read Jaeger No. 1.

Case III. Miss M. W., aet 8. R. E. + 8.00, L. E. + 7.00, only occasionally uses right eye notwithstanding the fact that she can see with it as well as with the left.

Case IV. Master F. R., aet. 11. R. E. + 3.50, L. E. + 2.50. Right eye amplyobic, can scarcely count fingers; uses left eye exclusively.

If one studies these cases and considers the fact that an overwhelming majority of people are right handed and therefore inclined to use the right eye in preférence for close work, then one becomes impressed with the idea that the use of the eye has some bearing upon anisometropia,

Last summer a lady consulted me for failing sight. An ophthalmoscopic examination showed her right eye one diopter more hyperopic than the left. I asked her if she was left handed and she replied. "Not altogother, but because of a stiff finger on my right hand I do my sewing with the left hand."

Three days later I again tested her eyes and found them equal. In a number of other cases tested and recorded anisometropic I found at another examination both eyes equal.

Probably some of my readers will say: "Oh well, there has been some spasm of accommodation." About this spasm of accommodation, which has become a kind of a fixture in ophthalmic phraseology, I will say something later; here I wish only to say that I feel like drawing a comparison between strabismus and anisometropia. Both are found in a settled or an unsettled condition; some people squint at times, others all the time; in the same way some people have anisometropia at times and others have it all the time, but when they have it, then the left eye is always more plus.

It if hardly necessary to say that although it is sometimes impracticable to use a mydriatic, I have used all kinds of mydriatics systematically in a sufficient number of cases to control my findings with the ophthalmoscope.

Myopia is comparatively rare in Montana. In the above mentioned list I find only 17 people with an unequal amount of myopia without astigmatism and they all are more myopic in the right eye then in the left. Against these stands only one lady of forty who is emmetropic in the right eye and extremely myopic,—20.00, in the left. Besides her I find a number of cases of myopic astigmatism of the left eye together with a hyperopic right eye.

To test the refraction I use the ophthalmoscope of Parent. It is based on the same principles as the one of Loring and the only important difference is in the mirror which, at least in all the Loring ophthalmoscopes which I have seen, is large and rectangular, while it is small and round in the one of Parent. For the diagnosis of pathological changes of the fundus oculi both instruments are equally good, but for refraction work I prefer the one of Parent, because its small round mirror illuminates only a comparatively small round part of the fundus and if the refraction is tested on the disk, the blind spot of the fundus oculi, there is less irritation of the retina by light, which may cause contraction of the ciliary muscle, than under the use of Loring's large mirror. It is surprising how perfectly the accommodation is relaxed while one uses Parent's ophthalmoscope and how seldom one finds, in cases of hyperopia without astigmatism, a difference between the tests made with or without mydriasis. I made my tests on the disk, although I always tried and inspected the macula also. For refraction work the macula has the disadvantage that there are no blood-vessels to be seen with the ophthalmoscope and that it is so sensitive to the light that the test may be made erroneous by contraction of the ciliary muscle. With very few exceptions there is practically no difference between the refraction taken on the disk or on the macula. When I have the strongest plus lens with which I can see the disk yet distinctly, then I can always find and see distinctly with the same lens also the macula.

It is to be regretted that the shadow test, which does not enable us to see any detail of the fundus oculi, as we do with the ophthalmoscope, has come into such general use and has nearly crowded out the ophthalmoscope in refraction work.

In the last years I saw frequently in journal articles attention called to the fact that the standard of refraction, as it was established by Donders' classical work, is not correct; that the normal eye is not emmetropic, but slightly hyperopic. My tests with the ophthalmoscope show that a normal eye should be at least + 1.00; in children a higher grade of hyperopia even may be called normal.

Also in grown people, below forty, the same does no harm so long as the general health is good. Beyond the age of forty the only trouble arises from its becoming manifest through presbyopia. Whenever one finds a refraction of + 0 which would be the standard emmetropia, there is some trouble, either functional, on the part of the ciliary muscle, or directly an error of refraction.

Physiologists test the acuity of vision by the smallest visual angle under which objects can be discerned. The axes of the bundles of light which are focused on or closely around the macula, pass through the so-called nodal point of the eye, directly behind the lens, 15 mm. before the retina and 7 mm. behind the cornea.

The physiological test is made with a plate, perforated by two fine holes close together, moved to and from the eye in a tube until the holes can no more be discerned, but appear as one source of light. It was generally accepted that in the normal human eye the smallest angle under which two such holes can be discerned, is one minute, and the basis of the triangle on the left side of the nodal point, on the retina, is equal to the distance between the centers of two neighboring cones representing one unit of sight (Sehkreis). By later and more exact tests, Du-Bois-Reymond, Jr., and others have found that, although varying in size, the visual angle is as a rule smaller than one minute (about 50 seconds).

The oculists did not find the physiological test suitable for their work; they preferred pictures to test the sight, and as pictures the selected letters of a certain size. Thus, basing on the physiological test, as it was accepted at that time, Snellen designed his chart, which is still to-day recognized as the standard. He assumed, that a line, one-sixteenth of an inch thick, when viewed from a distance of 20 feet, should appear under a visual angle of one minute, and designed letters five-sixteenths of an inch square, whose lines were one-sixteenth of an inch thick. He regarded an eye which can read such letters at a distance of 20 feet, to be normal.

An angle of 90° has 5400′ or 6480 times 50,″ A quarter of a circle with a radius of 20 feet, measures about 30 feet or 5780 sixteenths or 6480 eighteenths of an inch. Therefore, one-sixteenth of an inch, while being nearly correct for a visual angle of one minute, is too much for a visual angle of fifty seconds; an eighteenth would correspond to the latter one. But much smaller lines ought to be visible at a distance of 20 feet, provided light enough is issued. With a sufficient strength of light the lines may be as fine as the holes in the physiological test, and the letters which a normal eye would recognize could be nearly as small as the smallest distance in which the eye can discern the holes.

If a square be divided in 25 equal squares and viewed from a distance, so that the length of the sides of the small squares correspond to a visual angle of 50″, then the image of this square on the retina will cover an area of 25 cones in a square on the macula, or of 25 units of sight (Sehkreise). If one draws into such a square, letters whose lines are as broad as the sides of the little squares, then the sides of some letters, for instance E and H, will exactly coincide with the little squares, while the sides of other letters, for instance A and O, will cover parts of neighboring squares. Exactly the same relation will be on the retina between the lines of the image and the cones.

Each cone is capable only of one perception, even if it receives several impressions at the same time, the perception being a kind of a mixture of, or a compromise between, the different impressions. If a cone receives an equal impression, either black or white, then the center in the brain sees black or white. But if the cone receives a impression mixed of both, then the result will be the perception of grey.

If the shape of the letter tallies with the arrangement of the cones a clear perception, equal and black will result. If however, some of the lines cover cones in their entirety, while other lines of the same letter cover parts of neighboring cones, then we will see parts of the letter black and distinct and other parts grey and indistinct and when called upon to name the letters we will recognize some of them correctly, while we will make mistakes in others (confusion letters), although both have the same size.

Although in reality the row in which some letters are recognized correctly, should be admitted as the row which indicates the Vision of the patient, invariably only the smallest row was recorded in which no more mistakes occurred.

Authors generally give the question of the exact amount of normal vision, just a passing thought. They simply accept Snellen's $V = {}^{20}/_{20}$ as granted and some add "children and savages" often have better vision, but to what extent, apparently, has not been investigated thoroughly. Therefore, there is a special interest in testing and recording the vision of healthy people.

The tests on which this paper is based were made with Snellen's chart, also with Gould's chart and with some specially designed charts representing the proportion of 5 feet to $^1/_{64}$ inch.

The smallest letters of these charts have lines $^1/_{32}$ inch thick; the letters are $^5/_{32}$ inch square and persons who read these in a distance of 20 feet, have $V = {}^{20}/_{10}$.

Lines $^3/_{64}$ inch thick, letters $^{15}/_{64}$ inch square, $V = {}^{20}/_{15}$.

" $^4/_{64}$ ($^1/_8$) " " " $^5/_8$ " " $V = {}^{20}/_{20}$.

This is Snellen's full, normal vision, with viual angle of one minute for the lines or 5 minutes for the whole letter.

Lines $^5/_{64}$ inch thick, letters $^{25}/_{64}$ inch square, $V = {}^{20}/_{25}$.

Lines $^6/_{64}$ inch thick, letters $^{30}/_{64}$ inch square, $V = {}^{20}/_{30}$.

et cetera.

My records show 68 persons who have with both eyes together, which will in the future be indicated by b., and with each eye alone, R. & L., a vision of $^{20}/_{10}$, V. b., R. & L. $^{20}/_{10}$. Of these 54 are males and 14 females. Of the males, 42 are schoolboys from 9 to 15 years old and 12 are adults. Of the females, 10 are schoolgirls and 4 are adults. The number of school children examined, male and female, are about equal, so, it appears, boys have a better distant vision than girls.

Of the 42 schoolboys with V. b., R. & L. $^{20}/_{10}$ 28 say that all lines of the clock dial look equal to them, 10 say the horizontal and 4 say the vertical lines look decidedly darker and more distinct than the others. The amount of this astigmatism was measured in several instances and the highest found was 0.25 D. Not one of these boys says that his eyes ache. The refraction is in 31 of these 42 boys + 1.00 in both eyes, not one of them has less than this, but 11 boys have more, + 1.50, +2.00 and a few even + 3.00. The refraction is in two instances different in both eyes, one boy has R. + 1.00, L. + 3.00, and one has R. + 300, L. + 4.00.

Of the 12 men with V. b. R. & L. $^{20}/_{10}$ only one, of 21 years, says that the horizontal lines appear darker to him all others see them all alike. Ten of the 12 men have a refraction of + 1.00 in both eyes, one, a college professor, who leads an indoor life, has R. + 0, L. +0.50, and one, a cowboy, has a refraction of + 2.50 in both eyes. Not one of these 12 men, not even the professor, says that his eyes ache.

The distant vision of these men and boys with V. b. R. & L., $^{20}/_{10}$, who were tried with lenses, remained unchanged under the use of +0.50 spher., while + 0.75 spher. reduced it sometimes to $^{20}/_{15}$ and + 1.00 to $^{20}/_{20}$.

The refraction remained the same under and without mydriasis, but the distant vision was by mydriasis reduced to $^{20}/_{20}$ or even $^{20}/_{25}$. The reduced vision could be improved with convex lenses to $^{20}/_{15}$, but not to $^{20}/_{10}$.

Of the 10 schoolgirls with V. b., R. & L. $^{20}/_{10}$ only one states her eyes ache, probably due to an attack of measles occurring 8 months ago. Four of the girls have a refraction of +2.00, the others have + 1.00. Only one sees the horizontal lines of the clock dial darker.

Of the 4 women with V. b., R. & L. $^{20}/_{10}$ not one has any trace of astigmatism and all have a refraction of + 1.00 in both eyes, but nevertheless two of them, a young lady of 24, and a married woman of 36, say that their eyes feel weak and ache; both have uterine trouble. The oldest of the four ladies is 49 years old and her eyes never give her any trouble.

Of the children with V. b., R. & L. $^{20}/_{10}$ two have a mild form of blepharitis marginalis, together with a refraction of + 1.00 and are in the best of health.

Another list compiled from the records of my eye tests contains 46 people who with the use of both eyes have a vision of $^{20}/_{10}$, but with one eye alone only $^{20}/_{15}$. If binocular vision exists, one eye can assist the vision of the other eye considerably; if binocular vision is excluded, the contrary may take place; a person may have a better vision with one eye alone, than with both.

Of these 46 people with V. b. $^{20}/_{10}$, R. & L. $^{20}/_{15}$ 32 are children, 14 are adults; of the children 17 are boys and 15 are girls; of the adults 7 are men and 7 are women. Of these 46 persons 28 say that all the lines of the clock dial appear equal to them at a distance of 20 feet, 8 see the horizontal lines darker and 6 the vertical lines. 4 say the lines appear equal, when viewed with both eyes, but the vertical lines appear darker to the right eye when the left is closed and the horizontal lines look darker to the left, when the right eye is covered. The refraction of these people varies from + 0.50 to + 3.00. Most of them have + 1.00 in both eyes. Only 4 of them say that their eyes ache, a young lady of 17 and a boy of 10, as a sequel of measles, a boy of 11 with chorea, and a man of 29, from unknown causes, and just these 4 persons have a refraction of +1.00 and are free from astigmatism.

Hyperopia up to + 3.00 may be present in young persons, without causing any symptoms, so may astigmatism up to 0.50 D. Especially are both compatible with V. b. $^{20}/_{10}$, R. & L. $^{20}/_{15}$.

By far the greatest majority of people who possess good and strong eyes have V. b., R. & L. $^{20}/_{15}$. Really everybody ought to and many could be made to have V. b. R. & L. $^{20}/_{10}$, but $^{20}/_{15}$ is good enough. People, however, who fall short of $^{20}/_{15}$ cannot be considered as having full vision. The old standard V=$^{20}/_{20}$ (Snellen) ought to be changed to V. b. R. B L. $^{20}/_{15}$.

A list of 91 boys from 7 to 15 yeare old, with V. b., R. & L. $^{20}/_{15}$ shows 56 who see all lines alike at a distance of 20 feet, with both eyes, as well, as with each one alone, and three who see them with both eyes alike, but say that with the right eye the vertical lines and with the left eye the horizontal appear darker, when the fellow eye is closed. 18 boys say the horizontal lines, 10 say the vertical look darker with both eyes as well as with each eye alone. Three have traces of astigmatism in one eye only, while the other eye sees the lines of the clock dial all alike. One, a boy of 13, has an astigmatism with divergent axes, All lines appear equal to him with lenses + 0.50 cyl., axis R. E. 135°, L. E. 45°, but his vision is the same with or without such lenses. His refraction is + 1.00 in both eyes the same, his eyes feel strong, his health is in every regard good and he needs no glasses.

11 of the 91 boys with V. b., R. & L. $^{20}/_{15}$ have a refraction of from + 2.00 to + 3.00; one has + 4.00 in both eyes. In five cases the refraction is different in both eyes, always more plus in the left. All the other boys have + 1.00 in both eyes, except 3 who have only + 0.50 and one who has + 0 in the right and + 1.00 in the left eye.

8 of the boys complain that their eyes often ache. This can in no case be traced to an error of refraction. In four cases it is evidently a sequel of measles; in one case it is apparently caused by too much reading with electric light. This is the boy who has R. E. + 0, L. E. + 1.00. He sees the horizontal lines darker. His age is 15 and his health is good.

2 of the boys have blepharitis marginalis. One has a refraction of + 1,00 in both eyes and no astigmatism, and the blepharitis causes him no trouble whatever. The other one, a lad of 9, has a refraction of + 2.00 in both eyes and the horizontal lines look darker to him. His eyes ached when he was brought to me, but a local treatment of the blepharitis, together with treatment of constipation gave him entire relief, without influencing his refraction in any way. He needs no glasses.

Of 78 girls, from 7 to 15 years, with V. b., R. & L. $^{20}/_{15}$, 46 say that all the lines of the clock dial look equal to them at a distance of 20 feet, 21 say the horizontal, 8 say the vertical lines look darker and 3 say that while with both eyes the lines look alike, to the right eye the vertical and to the left the horizontal lines look darker, when the fellow eye is covered. The refraction is in 14 cases + 2.00 or more, up to + 4.00 and in one case even + 5.00 in the left eye. Only in one case it is less than + 0.50.

Seven of these 78 girls say that their eyes ache, but not one has any error of refraction. In four cases the aching can be traced back to an attack of measles, in the three others the cause cannot be ascertained. On the other hand one girl, 13 years old, has in the right eye + 3.00, in the left + 4.00; the lines of the clock dial look equal, when viewed with both eyes, but to the right eye the vertical and to the left eye the horizontal lines look darker, when the fellow eye is covered. Another girl, of 10 years, has even + 4.00 in the right and + 5.00 in the left eye, no astigmatism, but the eyes of both of these girls feel strong and give them no trouble whatever. Both have V. b., R. & L. $^{20}/_{15}$.

Of adults, men and women, the great majority of those who possess good eyesight, have V. b., R. & L. $^{20}/_{15}$, and a refraction of + 1.00 in both eyes. If, however, the adults are arranged to their age, then the percentage of those who succeed in preserving V. b. R. & L. $^{20}/_{15}$ grows smaller with the increasing age, as quite a number of causes interfere with the sight more and more the older we grow.

Of 37 people with V. b. $^{20}/_{15}$, R. & L. $^{20}/_{20}$, 4 are presbyopic. Two gentlemen, close to fifty, have a refraction of + 0 in both eyes; their eyes feel good, they only need glasses for reading. Their distant vision cannot be improved by any kind of lenses. The two others are elderly ladies whose eyes give them a good deal of trouble. One of them is 55; her refraction is + 0. 75, in both eyes. With lenses + 0. 50 spher. her Vision can be improved to V. b. R. & L $^{20}/_{15}$; with lenses + 0. 75 opher. it is V. b., R. & L $^{20}/_{20}$. Without lenses the horizontal lines of the clock dial appear a little darker, with lenses + 0. 50 spher. the lines look all alike.

Of the 33 others with V. b. $^{20}/_{15}$, R & L $^{20}/_{20}$ not less than 25 say that their eyes ache, but neither hypermetropia nor astigmatism can be blamed for this. Those who have a larger amount of either could be easily confronted with many times their number of people of the same age and sex with the same or a higher degree who have no inconvenience and better sight.

Of the 25 persons with V. b. $^{20}/_{15}$, R. & L. $^{20}/_{20}$, whose eyes ache, one is a man of 35 years with dyspepsia, chronic constipation and dark scanty urine, when he consulted me. His eyes ached and were sensitive to light; the conjunctiva was hyperaemic. The lines of the clock dial looked all alike to him. His vision could be improved neither by plus nor minus spherical lenses. The ophthalmoscope showed a refraction of about + 0 in both eyes. By a thorough mydriasis neither the distant vision nor the refraction was changed.' The interior of the globe did not look clear and bright, and reminded me of the patient's urine. The idea suggested itself that the index of refraction was a littte increased by saturation of the blood and there-from of the vitreous body and aqueous humor, with products of imperfect metabolism and that the standard refraction + 0, with V $^{20}/_{20}$, which does not occur in normal eyes, had in this case been produced by a pathological change. He received lenses +0.50 spher., for constant, but only temporary, use, and full directions how to regulate his bowels and reported a month later great improvement in every regard.

Three young women, early in the twenties, with V. b. $^{20}/_{15}$, R. & L $^{20}/_{20}$ and all without any trace of astigmatism, complained that their eyes ached. The refraction is different, one has R. E. + 0. 50, E. R. + 1.50, one has in both eyes + 2.00 and one has in both eyes + 3.00. Nevertheless they all accept the same lenses. They all get V. b. R. & L $^{20}/_{15}$ with lenses + 0.50 spher. and say their eyes feel good with them. Those with more hyperopia could not wear stronger convex glasses on account of blurring of their sight. The health of these 3 ladies is apparently good in every regard. According to the prevailing views their troubles would probably be diagnosed as spasm of accommodation, but should it not be rather an insufficiency of the ciliary muscle? All the extrinsic muscles of the eye were tested and found more or less guilty of insufficiency. Why should the ciliary muscle not be the same? If these cases had spasm of the ciliary muscle, then it would hardly be possible to find their hyperopia so easily with the ophthalmoscope.

The reason why nobody ever thought of insufficiency of the ciliary muscle is probably to be looked for in the generally adopted standard: V=$^{20}/_{20}$, refraction + 0, together with perfect relaxation of the ciliary muscle. From this zero-point there is no impairment of the vision possible through any further relaxation of the ciliary muscle. This is different with the standard: V. b., R. & L. $^{20}/_{10}$ or at least $^{20}/_{15}$. Refraction + 1.00.

Mr. J. B., a young man of 23 years, of perfect health and splendid physique submitted to a thorough test of his eyesight, first without and then under mydriasis.

V. b., R. &. L. $^{20}/_{10}$. Refraction + 1.00.
With lenses + 0.50 spher, V. b., R. & L. $^{20}/_{10}$.
With lenses + 0.75 spher, V. b., R. & L. $^{20}/_{15}$.
With lenses + 1.00 spher, V. b., R. & L. $^{20}/_{20}$.

A 1% solution of Homatropine dropped into both of his eyes at 9, 9:30, 10 and 10:30 a. m. Examination at 11 a. m. V. b. $^{20}/_{20}$, R. $^{20}/_{20}$, L. $^{20}/_{25}$. Refraction R. & L. + 1.00.
With lenses + 0.50 spher, V. b., R. & L. $^{20}/_{15}$.
With lenses + 0.75 spher, V. b., R. & L. $^{20}/_{15}$.
With lenses + 1.00 spher, V. b., R. & L. $^{20}/_{20}$.

The effects of Presbyopia of Mydriatics and of insufficiency, paresis and paralysis of the ciliary muscle are identical in reducing the distant vision from $^{20}/_{10}$, resp. $^{20}/_{15}$ to $^{20}/_{20}$, $^{20}/_{25}$ or still further, without effecting the refraction, as this appears with Parent's ophthalmoscope. The presbyopic eye, as a rule, preserves the refraction it had, before it became presbyopic; in some cases, however, its refraction can be changed by a change of the index of refraction through disease.

Of the 25 people with V. b. $^{20}/_{15}$, R. & L. $^{20}/_{20}$, whose eyes ache, 15 are children, 7 boys and 8 girls. 5 of these date their trouble from an attack of measles, 3 to 8 months ago.

One, a lad of 11 years, was tested and recorded a year ago: V. b., R. & L. $^{20}/_{10}$. Refraction R. & L. + 1.00. The lines of the clock dial looked all alike, at 20 feet, to b. R. & L. He approached me the other day with the remark, that he could no more see so well and that his eyes had been aching for several months. On examination I found V. b. $^{20}/_{15}$, R. & L. $^{20}/_{20}$. The horizontal lines darker to b. R. & L. Refraction in both eyes + 1.00. The boy has been growing fast of late, but is apparently healthy. Similar cases came under my observation, also some of just the opposite character, cases of improvement of the distant vision together with improvement of the general health.

Insufficiency of the ciliary muscle can impair the vision to $^{20}/_{30}$ without the presence of any high grade of refractive error. It occurs more frequently in ladies and girls than in men and boys, and its frequency accounts for the fact that the standard of normal vision has been made too low.

Persons with insufficiency of the ciliary muscle readily accept weak convex lenses, + 0.25 or. + 0.50 spher. Their object is not to furnish a full correction of the hypermetropia present, but only to render some assistance to the weakened ciliary muscle in its natural efforts to overcome the same, as prisms are given to assist the extrinsic muscles to avoid diplopia. Therefore they should not be given for constant use, as prisms should not be worn constantly according to the teachings of Savage, and others, before all other means to restore the strength of the ciliary muscle are exhausted. Such means are, besides a tonic and reconstructive treatment, outdoor exercise and practices to look at small distant objects, for instance to try and distinguish on a distant hill a cow from a horse. These exercises reestablish binocular vision, if it has become defective, and strengthen the guiding sensation in the cooperation of the extrinsic eye muscles for closer work. They also have a great power to prevent or at least postpone the development of presbyopia.

People who had their eyes tested under mydriasis with homatropine often say that, after the effects of the same are over, their eyes feel stronger, the aching is gone and the sight is better. Instillations of a one quarter of a per cent solution of homatropine, if made in the evening, have a very good effect in cases of so-called eyestrain. The cycloplegia is over in the morning and a feeling of comfort remains all day.

# ABSTRACTS OF AMERICAN AND ENGLISH OPHTHALMOLOGICAL LITERATURE.

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(QUARTER ENDING APRIL 1, 1900.)

### Secondary Membranous Cataract.

NOYES, HARRY D., New York. (*Medicine*, Jan., 1900.) After giving some of the recent history of the operation for cataract, the writer considers that the operation is becoming more and more important as simple extraction, without iridectomy and is coming into increasing favor. He considers a case of cataract extraction which has made a satisfactory recovery, but presents a membranous obstruction, a problem which can be discussed under the following heads: "(1) A circular, unadherent pupil which will dilate freely under a mydriatic. (2) A circular unadherent pupil which will not dilate freely under a mydriatic. (3) A pupil adherent and consequently not dilatable; adhesions existing between the iris and the membrane. (4) In cases where iridectomy has been done with adherent pupil, occluded by a more or less dense membrane."

1. If the pupil be free and easily dilatable, Knapp's knife-needle may serve the purpose. The author has also tried Da. Gamo Pinto's method of dividing the membrane with an extremely narrow Graefe knife, either through the cornea or the sclera, but found himself in trouble because of the tendency of the knife to enlarge the wound, with consequent loss of aqueous and sometimes vitreous humor. In these cases he, therefore, prefers some form of cutting needle with a round shank.

2. When the pupil is unadherent and undilatable we always have trouble, for the simple reason that the field of operation is narrow and the mechanical conditions prevent a sufficient sweep of the point of the instrument to effect an adequate division of the obstruction. The difficulty is still further increased if the membrane is thick and tough. In these cases Noyes found that Pinto's method gave the most efficient and satisfactory result—namely, to pass a very narrow Graefe knife through the sclera into the membrane and to make a free incision. But in order to avoid the prolapse of vitreous which may occur when it is necessary to change the direction of the knife, he has devised another form of instrument which has proved satisfactory. It is simply a very narrow and thin Graefe knife, which has a cutting edge of about 8 millimeters in length, and behind the blade has an extremely thin shank. The mode of operating which the writer now adopts in this class of cases is as follows:

"The knife-needle is entered through the sclera in the horizontal meridian about 3 or 4 mm. behind the limbus. The knife is passed from behind forward, posterior to the iris, until the point is visible on the proximal side of the pupil; then it pierces the membrane and cuts it in a vertical section by a to-and-fro movement, going forward into the anterior chamber; then it is pushed across the pupillary area and penetrates the membrane on the distal side of the pupil, and again by a to-and-fro movement makes a second vertical incision in the membrane. It has been entered so that the blade is either diagonal or flatwise in its relation to the plane of the iris. Having made two vertical incisions in the capsular membrane, the one on the proximal side of the pupil and the other on its distal side, the knife is turned so that its cutting edge is backward and the intervening portion of the membrane is freely divided by a movement toward the center of the eyeball. It will be seen that this maneuver practically forms the letter H, and then the knife is made to move in various directions until all obstructive membrane is completely divided and a perfectly clear jet-black pupil is obtained.

No one can criticise the mechanical fitness of such a method, because it saves traction on the ciliary process, it completely divides the obstruction, and it secures a clear pupil. The patient may require an anesthetic; the eye will be bandaged and the patient put to bed, because the writer does not profess to have any less respect for the ciliary body than his colleagues, although experience has taught him that with proper asepsis and delicacy of maneuver, results fully justify a proceeding which at first seems audacious. The operation of extraction of a tense membrane as practiced thirty years ago with frequency is beautiful, and undoubtedly is still in certain cases justifiable, but it is very difficult to make the instrument employed—the capsular forceps—absolutely aseptic in the first place, and in the second place this extraction, always *per corneam*, is attended often with so much violence to the ciliary body that the writer has had occasionally to deplore disastrous results. On the other hand, the method now commended, although it has not long been practiced, has proved itself worthy of employment, and has not yet given rise to any unpleasant results. The only possibility is the causation of some slight vitreous opacities. It should be remembered that vitreous opacities not infrequently accompany cataract, and an operation is justified in resorting to a method which does not seriously aggravate existing conditions. Speaking from a sufficient experience, the writer is now of the belief that operations for membranous cataract, where the pupil is small, can be performed by this guarded knife-needle with a degree of certainty and of safety that puts this method of operating far in advance of any which has thus far been employed.

3. An adherent pupil, which, of course, is imperfectly dilatable, affords opportunity for the operation described through the sclera, but of necessity in these cases there has been iritis, and reaction of greater severity will follow this operation. If severe iritis has occurred and the pupil has become broadly adherent, reaction of greater degree must be expected, and recovery will not be secured under five or eight days, and it may be necessary to employ the usual proceedings of hot fomentations and anodynes.

4. In cases complicated by prolapse of the iris, or where

iridectomy has been done, we have to deal with a membrane which is probably the thickened capsule and partly the result of inflammatory exudation. The writer then resorts to the method advised by Wecker—namely, division by his peculiar scissors. The results are, of necessity inferior, and we must accomplish the best we can under the circumstance.

Finally, the writer is prepared, in all earnestness and with a sense of his own responsibility, to say that the operation through the sclera by the knife-needle, now presented, is practically devoid of serious risks and can be recommended for general adoption. He has taken it up for a large proportion of cases of membraneous cataract after having run the gamut of almost all methods, and has adopted the scleral method with some timidity, until recent experience has convinced him not only of its efficacy, but that in the great majority of cases it is not attended by serious risk or unpleasant reaction. Of course, the performance of a scleral puncture should not be undertaken at an earlier period than from one to three months after the original operation.

It yet remains to say that one will sometimes wisely refrain from any secondary operation when the patient's position in life does not demand the very highest vision, or when timidity on his part opposes further operation, and he expresses himself contented with such sight as he has gained from the extraction. "I have lately declined to operate further in a case where vision was 0.4, because the man was decrepit, of despondent disposition, and had lost the other eye by an unsuccessful operation. The obstructing membrane was thin. Not infrequently a membrane which is very thin for three months after extraction, after another twelve months becomes appreciably thickened and may require interference."

### The Operative Treatment of Myopia of High Degree by the Removal of the Crystalline Lens.

BULL, CHARLES STEDMAN, New York, (*Med. News*, Jan. 20, 1900.) This paper is an interesting resumè of this operation and its indications founded on the writings of many different observers and operators.

The writer points out that, "the great danger of myopia lies in the progressive tendency of the disease in many young patients, and the question of operative interference has to do only with the progressive form of hereditary degeneration of the choroid and retina; a myopia complicated not only by progressive posterior staphyloma, but by development of degenerative changes in the retina and choroid, whether predisposing or hereditary."

He states the disadvantages of myopia of high degree and then gives the history of the operation of removal of the lens in this affliction. The operation was first proposed by Beer in 1817. He had no followers and the subject was not heard of again till Mooren, in 1858, again advocated the step. VonGraefe and Donders were both opposed to it, and so it languished until Fukala, in 1887, revived interest in it. His first paper appeared in 1890, and was based on 19 cases in patients under twenty-four years of age. His method of operating consisted in an iridectomy upward and a small discission of the anterior capsule, repeated as often as necessary, the lens masses being left to be absorbed. He claimed the following advantages for the operation: (1) Distinctness of distant vision; (2) enlargement of the retinal images; (3) relief from the extreme strain of accommodation; (4) relief from the disadvantage of bending the head over the work; (5) restoration of binocular vision for the near-point. Fukala's next important paper on the subject was published in 1894. He no longer did an iridectomy, but advised extensive laceration of the anterior capsule and extraction of the swollen lens masses through an incision in the cornea.

In 1897 Fukala's third important paper appeared; he endorsed Schanz's investigations which found that the loss of light caused by refraction and reflection is less in eyes from which the lens has been removed than in the normal eye, and that increased acuteness of vision after extraction was due to: (1) Increased size of the retinal images; (2) increased intensity of illumination of the retina; (3) simplification of the optical apparatus and absence of lenticular reflexes.

Continuing his views of the history of the operation, the writer states that following Fukala's first paper, other observers, mainly in France and Germany, took up the subject. At present the advocates of the operation include some men of conservative position and established reputation. They all claim the following advantages for the operation: The eye, deprived of its lens, becomes either very slightly myopic or else hypermetropic; the retinal images are larger; the eye has greater visual acuity; the far point recedes from the eye; excessive efforts at convergence as well as congestive phenomena disappear.

Vacher, the most active advocate of the operation among French ophthalmologists, advised it only in myopia of more than 14 D. He now advises extraction of the transparent lens without discission or iridectomy. He considers that neither choroidal degeneration nor extreme age of the patient is a contraindication.

Schweigger, a very conservative observer, favors the operation in cases of more than 16 D. He recommends laceration of the anterior capsule with Bowman's stop-needle, with or without iridectomy, according to the age of the patient. He considers extensive degeneration of the choroid in the region of the macula and great age of the patient both contraindications for the operation.

Schroeder draws the following conclusions from his somewhat large experience: (1) The danger of the operation in otherwise normal myopic eyes is trifling; (2) even with chorio-retinal changes in the fundus, a retinal hemorrhage is only to be feared when the changes are at the macula; (3) the changes in the eye caused by the operation do not increase the dangers to which such eyes are subject, such as detachment of the retina and choroiditis: (4) a lessening of these dangers by hindering the increase of the myopia and the development of choroiditis has not been proved.

Von Hippel prefers to operate on both eyes, if both are highly myopic, but never for myopia of less than 12 D.

"Knapp does not approve of removing a transparent lens, for, owing to some of the cortex remaining behind, the results will be unsatisfactory from suppuration, irido-cyclitis, intraocular hemorrhage, or detachment of the retina. He thinks that the real value of this treatment of myopia will be recognized when the period of its boom is passed."

Other writers upon this subject whose opinions are cited by Bull, include Lagleyze, Wray, Hess, Fröhlich, Swanzy, Panas, Otto, Sattler, Hirschberg, Jessop and Jackson.

The writer considers his own experience in operating cases of high myopia too limited to draw any conclusions as to the advantages or disadvantages of the operation; but after a careful review of the important publications on the subject, he presents theoretical conclusions, of which the following paragraphs represent a part:

"The possible dangers from the operation are four in number and are in the order of their importance and frequency as follows; (1) Intraocular hemorrhage from rupture of a choroidal or retinal vessel; (2) detachment of the retina, with or without hemorrhage; (3) secondary glaucomatous symptoms, such as increased tension, ciliary injection and pain, all resulting from the swelling of the lens after laceration of the capsule; (4) infection of the corneal wound, iris or both. . . . . .

The conditions which should contraindicate any operation may be enumerated as follows: (1) Extensive degenerative changes in the retina, and choroid in the region of the macula lutea; (2) detachment of the retina already existing; membranous opacities of the vitreous, which indicate more or less extensive disease of the choroid and of the walls of the blood-vessels; (4) the previous loss of one eye from whatever cause; (5) decided loss of transparency of the cornea from previous inflammation; (6) any form of contagious conjunctivitis, particularly trachoma; (7) advanced age of the patient, and (8) a myopia of less than 12 D.

*Indications for the operation.*—The indications for the operation are given first by the degree of visual acuity actually existing at the time (1) If the central vision of the myopic patient with the best possible correction by glasses is not sufficient for the needs or social position of the patient, the operation is indicated, first on the one eye and then on the other, if no contrary indications exist. (2) If there are unmistakeable evidences of a rapid increase in the amount of nearsightedness, true progressive myopia, and if the myopia is 12 D. or more, the operation may be done, of course under the previously mentioned restrictions."

Finally the writer describes the steps to be taken before the operation, the operation itself and the after-treatment as given by the different authors cited above.

### Electrolysis in Granular Diseases of the Eyelids.

MYERS, T. D., Philadelphia. (*Ophthal. Record*, Jan. 1900.) The writer has practised this method of treating trachoma for the past ten years and believes it the only method which will reduce the hypertrophies in the conjunctiva without injury to this membrane.

"The current required is a very weak one, but to insure steadiness, a battery of not less than thirty ammonia cells should be used. A reliable milliampere-meter is an absolute necessity. A current of one and a half or two milliamperes is sufficient. The needle should be placed in the tissues, which of course must be well under the effects of cocain before the contact with the positive pole is made. It must be kept in place until the effect of the electrolysis is evident by the escape from the sides of the needle of a white pasty mass. Three or four punctures should be made in each hypertrophy, but of course the number required depends entirely upon the extent of the thickened tissue. In the eight years I have been using this agent I have never seen a reaction result which could alarm the most timid operator. I have made as many as twenty to thirty punctures at a single sitting many times. In 1891, when I published my monograph, entitled "A Study of the Modern Pathology and the Treatment of Chronic Granulations of the Eyelids," I reported seven cases treated by myself, and one case treated at the United States Naval Hospital in Philadelphia by Dr. C. J. Decker, U. S. N. Since that time my case books will show hundreds of cases treated by this method, and so satisfactory has it been that I have ceased to use copper and silver almost altogether in my office management of chronic granular disease of the eyelids. Electrolysis is clean and precise, and I apply it in all cases of chronic or semi-acute inflammation of the conjunctiva where the surfaces are roughened or granular, or where the inflammation is confined to spots or foci. In cases without hypertrophies, and in clearing out ulcers of the cornea, I use a ring made by bending a thin platinum needle around a probe, which leaves in the middle of the needle a ring of from two to five mm., in diameter. I twist the two ends of the needle together and fasten them in an ordinary holder. With this little instrument it is easy to remove a single granulation from the surface of the epithelium with the least possible disturbance of its surroundings and smooth off by gentle touches any roughened spots found there."

### Electro-cautery in Affections of the Lids and of the Cornea.

TIFFANY, F. B., Kansas City. (*Jour. Amer. Med. Ass'n.* Feb. 24, 1900.) In this paper the writer discusses the manifold uses of electro-cautery in ophthalmic practice, He deems it one of the most efficient and reliable agents in rodent, indolent or phagadenic ulcers of the cornea. For persistent fistula of the cornea, he believes no other treatment can take its place. Concerning its use in pannus, he expresses himself as follows:

"For the last few months I have used it repeatedly in pannus crassus, in which I usually first make peritomy, cutting through the conjunctiva with the neoplastic vascular tissue down to the sclera, and then, with the flat surface of the electrode at a white heat, I burn the pannus or vascular neoplasm down to the anterior elastic lamina of the cornea. I do not hesitate to make extensive searing, embracing the entire area of pannus tissue. In no instance have I had any ill results from this extensive burning, but, on the other hand, without an exception, when the cornea was even so enmassed by the pannus as to hide from view the iris, the cornea so treated would clear up and good vision be regained."

He also advocates electro-cautery in the treatment of ectropion, entropion, distichiasis and trichiasis. For ectropion, he incises with the white-hot blade through the conjunctiva to the tarsal cartilage, from the external canthus to near the punctum, 2 or 3 mm. from the edge of the lid. Sometimes a second and third incision parallel to the first, may be necessary. The effects of this treatment shows itself when cicatrization takes place, and he considers the results more easily attained than with laborious operations.

In operating for entropion he uses a clamp to put the skin on the stretch and burns through it into the tarsal cartilage. For distichiasis and trichiasis the treatment is limited to the parts of the lid involved. The resulting scar is slight and not disfiguring, and may, in time, with a little massage, be obliterated.

### Eviscero-Neurotomy; A New Operation.

HUIZINGA, J. G., Chicago. *(Journal Amer. Med. Assoc.*, Feb. 17, 1900.) The writer mentions the relative advantages and disadvantages of enucleation and evisceration. He recommends the following method of operating to obtain the advantages of enucleation—absolute certainty that sympathetic inflammation will not occur, as well as those of Mules' operation—a good, large stump for an artificial eye:

"Having obtained as aseptic a field of operation as is possible, the cornea is amputated and the opening thus made enlarged laterally by slitting the sclerotic up to the insertions of the internal and external recti muscles.

The contents of the globe are then removed in the same manner as for simple evisceration.

While an assistant keeps the mouth of the wound widely open, a pair of forceps is introduced into the inside of the ball, through the opening made by amputation of the cornea, and the sclerotic coat is caught about midway between the equator and the posterior pole, and button-holed with blunt pointed scissors.

This opening is then enlarged laterally, parallel with the equator, until it has encircled one half of the ball. A blunt, curved enucleation scissors are then introduced through this opening and passed back of the globe, and the optic and ciliary nerves are severed. Having thus loosened the eyeball posteriorly, this part can then be drawn forward, up to the corneal opening by partly everting the sclerotic, from behind by the aid of forceps, and that part of it, including the nerves, is removed by continuing the cut parallel with the equator until it extends entirely around the eye. In this manner the posterior segment of the eye, a section somewhat larger than the cornea is removed, and all the nerve connection thoroughly and permanently obliterated, while the rest of the sclerotic with its muscle attachments is allowed to remain.

The introduction of an artificial vitreous is very desirable, notwithstanding the fact that it is not always retained and the difficulty occasionally experienced to obtain prompt and perfect union by first intention. Where such unfortunate conditions do not obtain, and they are in the majority, the results are so much better for prothesis that I believe this practice would be more generally adopted if some material could be obtained that is more suitable to the purpose than either glass or metal. This subject will be discussed in another paper later. However, the use of the fenestrated aluminium ball in connection with this operation, as advised by Bryant, in implantation, ought also to be followed by good results. As a segment of the sclerotic has been removed, there is no longer any reason why the inside of such a sphere should not fill in with new connective tissue, which being continuous with that of the orbit, would prevent its extrusion.

The wound is closed with five silk sutures, and the after-treatment is the same as in evisceration. The local reaction following this operation has in no case been as severe as that following simple evisceration. In fact, I should say that it has been no more severe than after enucleation.

This operation is strictly in accord with what I consider one of the first rules in surgery, viz., to obtain the maximum in results by the removal of the minimum of tissue.

In conclusion: 1. This method, with the use of an artificial vitreous, leaves as perfect a stump as after Mules' operation. 2. It prevents absolutely the dangers of sympathetic inflammation. 3. The local reaction appears to be no greater than after enucleation. 4. We obtain the maximum in results by the removal of the minimum of tissue. 5. We obtain besides this, all the advantages claimed for Mules' operation, as well as those of enucleation without their disadvantages."

### A Further Contribution to the Value of X-Rays. In Detecting Metallic Particles in the Eye, with Remarks on Other Methods.

KIBBE, A. B., Seattle, Washington. (*Arch. of Ophthalm.*, Jan., 1900,) In this paper the author reports eleven additional cases in which the X-rays have been of great value in locating particles of iron within the eyeball. His enlarged experience with the method has served to strengthen his belief in its value and its superiority to other methods in use.

The procedure employed by Kibbe in all these cases consisted in "taking two radiographs on the same plate, the tube being moved a short distance from its primary position in making the second exposure. As a 'finder,' a large pin was placed in a piece of adhesive plaster, and this made to adhere to the closed lids in a vertical position." The middle of the pin was made to coincide with the centre of the cornea. In this way two images were obtained from which Kibbe located the body as follows:

"The position of the body relative to the pin gives us, first, a very accurate estimate of its depth in the eye; second, nearly as accurate an idea of its position with regard to the horizontal meridian, whether above or below it; and lastly, a close approximation of its position relative to the vertical meridian, as, if the two images of the body are more widely separated than are the images of the pin, we can be certain that the body was nearer the source of illumination," and vice versa. Thus a mere glance at the plate, if it is a good one and properly developed, reveals in which quadrant of the eye the foreign body is situated, as well as its depth.

The writer considers this method sufficiently accurate and very simple. The taking of the radiograph and the development and fixing of the plate, may all be done in twenty minutes. Finished prints need not be made since better information can be obtained from the plates themselves. Radiographs may be taken in one's office in broad daylight and, according to the writer, require no more time than thorough testing of the visual fields. For these reasons he considers the X-rays far preferable for detecting metallic particles to either the sideroscope of Asmus or the large magnet. His objections to the former are based on the difficulty of fullfilling, in a large city, all the conditions necessary for its accurate use. The sensitive needle must be far removed from any masses of iron and is affected by the passing of electric cars or even vehicles containing masses of iron. Furthermore even if the instrument succeeds in locating the foreign body, it gives us no idea of its shape or approximate size.

The use of the large magnet for diagnostic purposes the writer criticises as uncertain and possibly dangerous at times, since it may drag a rough particle against the ciliary processes and bruise them. Nor does this method, as a rule, furnish any knowledge of the location shape or size of the foreign body. Kibbe predicts that the X-ray apparatus will supercede all other methods for the detection and location of iron particles in the eye.

### Tuberculosis of the Conjunctiva.

EYRE, J. W. H., London. (*Arch. of Ophthalm.* Jan., 1900.) The writer considers that the relative frequency of cases of tuberculosis of the conjunctiva to the number of new patients has been underestimated. He has seen 11 cases among 31000 patients, a ratio of 1:2700: whereas Hirschberg in 1881 gave the ratio as 1:6000, and Mules, in 1885, as 1:30000.

He divides the cases into five clinically distinct groups, accepting Sattler's classification as a basis, The chief characteristics of these groups are, briefly, as follows:

Group I. One or more miliary ulcers, which usually caseate; they may or may not coalesce; they attack preferably the palpebral conjunctiva.

Group II. Grayish or yellowish subconjunctival nodules, rarely larger than a hempseed and resembling miliary tubercles.

Group III. Florid, hypertrophied papillae and rounded outgrowths of granulation tissue, sometimes derived from the tarsal conjunctiva, but usually springing from the fornices, and associated with œdema and thickening of the lids.

Group IV. Pedunculated "cockscomb" excrescenses in the fornices, of a jelly-like consistence, and often showing more or less extensive superficial ulceration.

Group V. A distinctly pedunculated tumor having the macroscopical appearance of a papilloma or fibroma of the tarsal conjunctiva.

The writer gives a description of the clinical features of these groups and adds the microscopical appearances of scrapings or sections in each. He reports in detail his last three cases, in all of which the inoculation tests gave a positive result.

The conclusions are the following:

1. Cases of primary tuberculosis of the conjunctiva occur in the proportion of at least 1: 2700; probably more frequently.
2. Primary tuberculosis of the conjunctiva is usually unilateral.
3. It occurs either as a caseating ulcer, or as an inflammatory new formation of the granuloma type—if as the latter, it belongs to one or other of four clinically distinct groups.
4. It is extremely chronic and exhibits no tendency to undergo spontaneous cure.
5. It does not usually tend to implicate the cornea until quite late in the disease, and the iris later still.
6. The preauricular gland on the same side as the affected eye is infected early, and then the next glands in the series, viz., those below the angle of the jaw.
7. If untreated, the conjunctival lesion will probably serve as the primary focus from which the bacillus tuberculosis will become disseminated to distant organs.
8. Removal should be thorough, and should be undertaken as early as possible. Under such circumstances, like other localized tuberculous lesions, a permanent cure may be confidently expected.
9. With regard to the microscopy of the disease, in the case of ulcer, tubercle bacilli can generally be demonstrated by suitable means in the "scrapings;" but where the lesion is of the nature of a granuloma, it is rather the exception than the rule to detect the organisms in sections of the tissues, but in such cases the experimental inoculation of a portion of the diseased tissue into the anterior chamber of a rabbit's eye or the subcutaneous tissue of a guinea-pig will rarely fail to prove a positive result (so far in my hands this method of diagnosis has never failed.)"

### Diphtheria of the Conjunctiva.

STEPHENSON, SYDNEY, London. (*The Lancet*, Feb. 17, 1900.) The writer points out that the only certain way of ascertaining the frequency of diphtheria of the conjunctiva is to make a routine bacteriological examination in all doubtful cases. This custom, observed in the North-Eastern Hospital for Children, showed that about 2 per cent. of cases of ophthalmia were diphtheritic.

Stephenson does not limit the name, diphtheritic conjunctivitis, to the classical and severe cases as described by Graefe with board-like lids and rapid destruction of the cornea, but includes all cases of membranes on the conjunctiva in which the Klebs-Löffler bacillus is found. He considers that "the existing terminology is not in touch with the ascertained facts. It would be preferable to put aside the ambiguous term 'croupous' and to classify cases into mild or severe, or even to adopt the anatomical basis of certain continental writers who recognize (1) interstitial cases, (2) the superficial membranous cases and (3) the catarrhal cases. . . . The remaining forms of conjunctivitis with membrane would naturally be classed with reference to the micro-organisms present, such as the pneumococcus, etc."

The treatment employed consisted in an injection of antitoxin in all suspected cases, without waiting for the results of the bacteriological investigations. Locally a 15 per cent. solution of potassium permanganate was painted on the conjunctiva once a day, and a weak antiseptic solution, such as corrosive sublimate 1 to 5000, was employed for cleansing the mucous membrane at frequent intervals.

### Green Vision.

DODD, H. WORK, London. (*The Lancet*, March 24, 1900. Report of March meeting of Ophth. Soc. of the United Kingdom.) Mr. Dodd said that some months ago he exhibited to the society a patient who saw every thing green, and since that time he had collected 13 published cases of this condition. In reviewing these he came to the conclusion that neither sex nor age had to be especially considered and the errors of refraction and their effects might be excluded. The condition of the general health was noticable in seven of the cases; two suffered from migraine, two from syphilis, and three from chronic lead poisoning. Ten of the cases showed some departure from the normal in their ocular structures, such as wounds, detachment of retina, choroiditis, optic atrophy, neuroretinits, as well as tortuosity of the retinal vessels. With the exception of two cases, following one a wound and the other an operation for cataract, the abnormalities were connected with the optic nerve and retina. As to the reason why these people had green vision these cases gave but little information. It should, however, be noted that the macular region of the retina in three cases was the part affected, and in two of the others the temporal side was indicated as being particularly disturbed. Looked at in the light of our knowledge of the conditions existing in tobacco amblyopia, possibly the same tissues were affected in the two conditions. Two of the cases in which green vision was noted only when the patients were in doors seemed to depend on the character or degree of the illumination.

### The Significance of Intra-Ocular Hemorrhage as to Prognosis of Life.

BULL, C. S., New York. *(Med. Record*, Feb. 3, 1900.) The writer emphasizes the importance of examining the interior of the eye in all diseased conditions of the blood and circulatory apparatus, inasmuch as a close observation of the retinal circulation and blood-vessels often affords definite information in regard to the condition of the blood-current and vessels throughout the body. He then takes up the various diseases in which retinal hemorrhages are apt to occur and describes the characteristics and prognostic significance of the latter in each affection.

His experiences lead him to draw the following conclusions:

"1. Hemorrhages into and beneath the conjunctiva are of little importance in the young, as they usually occur as a result of violent muscular effort....... The vessels in the conjunctiva, having little or no support in the loose connective tissue, readily give way to paroxysms of violent expiration. In the aged they appear spontaneously and point to a general weakened condition of the vascular walls.

2. Hemorrhages into the interior of the eye are always of prognostic significance. In senile angiosclerosis, retinal hemorrhages are very frequent and point significantly to the probable occurrence of cerebral apoplexy.

3. Recurrent retinal and subhyaloid hemorrhages in the young are of slight prognostic importance, especially if due to syphilis, whether inherited or acquired.

4. Hemorrhages into the vitreous in the young are of grave prognostic importance and point to the existence of general vascular degeneration.

5. In chronic interstitial nephritis and diabetes, retinal hemorrhages are of very grave prognostic significance, and independently of the presence of exudative retinitis point to a fatal termination of the disease. The mere presence of thrombosis of the central retinal vein with hemorrhages in the retina should arouse suspicion of the existence of albuminuria, and if this suspicion is confirmed by urinary analysis, the prognosis in the case is more unfavorable than in those cases in which the hemorrhages do not exist.

### The Spontaneous Disappearance of Senile Cataract.

PYLE, WALTER L., Philadelphia. *(Phila. Med. Journal*, March 17, 1900.) The writer gives a very interesting review of this subject with extensive bibliographical references. He calls attention to the fact that authentic cases of complete spontaneous disappearance of senile cataract have been reported from time to time. After a careful digest of the literature upon this subject he has classified the reported cases as follows:

1. Cases in which there was absorption after spontaneous rupture of the anterior or posterior capsule.

2. Cases in which there was spontaneous dislocation of the cataractous lens.

3. Cases in which there was intracapsular resorption of the opaque cortex and sinking of the nucleus below the axis of vision, after degenerative changes in Morgagnian cataract, without rupture of the capsule or dislocation of the lens.

4. Cases in which there was complete spontaneous resorption of both nucleus and cortex without reported history of ruptured capsule, dislocation or degenerative changes of the Morgagnian type.

5. Cases of spontaneous disappearance of incipient cataract without degenerative changes or marked difference in the refraction.

These classes are discussed and illustrated by published reports of cases and the history of one case (class 4) occurring in the practice of the writer is given. Concerning class 5, he closes his paper with the observation that: "There is little doubt that with the maintenance of good health, careful and repeated refraction and the proper use of the eyes, the chances of cataract maturing are greatly lessened, but beyond this any reliable method of treating incipient cataract has yet to be demonstrated, nothwithstanding the clinical evidence as to its possibility."

### Experimental Exophthalmos and Enophthalmos.

EDMUNDS, WALTER, Dr., London. *(British Med. Journal,* Febr. 8, 1900. Report of Jan. Meeting of Ophthal. Society of the United Kingdom.) Dr. Walter Edmunds read a paper in which he remarked that there were three ways in which prominence of the eyes could be affected experimentally: (1) By acting on the sympathetic, either stimulating it or dividing it; (2) by the administration of certain preparations or drugs; (3) by operations conducted on the thyroid gland. With regard to the first, stimulation of the cervical sympathetic produced: (1) prominence of the eye; (2) widening of the palpebral fissure; (3) at first increase and later decrease of the intraocular tension; (4) erection of the hairs of the head. Division of the sympathetic produced the opposite effect. Cocain was one of those drugs which produced proptosis, widening of the palpebral fissure, dilatation of the pupil, and decrease in the intraocular tension. Cunningham had shown that feeding a healthy animal on thyroid extract produced similar results. The author then showed photographs of monkeys and rabbits both before and after feeding on this substance. Exophthalmos after the administration of thyroid had once been observed in man by Beclére, where it appeared after excessive doses had accidentally been taken by a patient suffering from myxœdema. The third method of affecting the prominence of the eyes was by operations on the thyroid. Removal of the thyroid might produce either exophthalmos or enophthalmos, but in the monkeys usually the latter. Numerous lantern slides were shown of animals in which this had been done, as well as drawings of animals in which the sympathetic had been divided. The author summed up his results by saying that the discussion of these phenomena was particularly interesting in its bearing on the pathology and treatment of Graves' disease; the fact that the most important eye symptom of Grave's disease could be produced by the administration of thyroid ·preparations certainly suggested that the eye affection was secondary to the goitre. He had not tried the effect of division of the sympathetic in feeding with thyroid extract, but with the administration of cocain it diminished the effect produced. It therefore suggested itself that the exophthalmos might be benefited by division of the cervical sympathetic, and indeed the operation had been tried several times in man. The results were said, however, not to be very satisfactory, at least as far as the general disease was concerned.

### The Practical Applications of Largin in Diseases of the Eye.

STEPHENSON, SYDNEY, of London. (*British Med. Journal*, Mar. 17, 1900.) Modern pharmacy has provided us with several substitutes for nitrate of silver, such as protargol, argentamin, actol, itrol, and argonin. Largin, the latest of these synthetic compounds, occurs in the form of a stone-colored granular powder. It is stated by Merck to contain 11.10 percent of silver combined with protalbin, so that it is richer in the percentage of metal than any of the other compounds. Its watery solution has a brownish colour and an alkaline reaction, and keeps well in suitable phials. It is precipitated neither by albumen nor by chlorides. Largin is claimed to be a non-irritating bactericide possessing some astringent properties. It has been employed by Pezzoli and Finger in gonorrhoea. Marczel Falta appears to be the only writer who has yet published anything with regard to its action in ophthalmic disorders. By dropping a 1 per cent watery solution into the eye several times a day Falta claims to have obtained 'surprising results' in conjunctival inflammations and in catarrhal ulcerations of the cornea. In diseases of the tear passages he uses a ten per cent solution. Falta never observed any staining of the conjunctiva following its application.

For several months I have employed largin rather extensively in the treatment of superficial eye disorders, especially in the various forms of ophthalmia. The preliminary trials were made with a 3 per cent watery solution, but that was soon replaced by a 5 per cent., and eventually by a saturated 10 per cent solution; the remedy was also used as a powder in some cases, such as phlyctenulae of the conjunctiva. For the most part the remedy was painted over the exposed palpebral conjunctiva once or twice a day. In these various ways largin has up to now been employed by me in upwards of 100 cases of eye diseases. In some kinds of ophthalmia the results have been in nowise inferior to those obtained with silver nitrate, over which largin has one obvious practical advantage in the fact that its application neither causes pain nor is it followed by any appreciable reaction. Largin is, however, much more expensive than lunar caustic, but that drawback will doubtless be lessened as the advantages of the new agent becomes better known. It is to be especially noted that if used for more than a few weeks, largin certainly does stain the conjunctiva."

Stephenson reports the histories of cases of various forms of ophthalmia in order to illustrate the effects of largin treatment. In gonococcal ophthalmia, his results were disappointing and the remedy seemed inferior to protargol and silver nitrate. In the common acute contagious ophthalmia due to the Koch-Weeks bacillus, largin gave excellent results and a rapid cure followed the daily application of a 10 per cent solution to the conjunctiva. In acute trachoma, largin gave good results; also after trachoma operations. In that form of chronic ophthalmia associated with the diplo-bacillus of Morax, largin will sometimes bring about a speedy cure but is generally inferior to a watery solution of zinc sulphate, 10 to 40 grs. to the ounce. The remedy was of service in the more acute forms of blepharitis associated with redness and swelling of the conjunctiva and a rather profuse secretion. In some few cases of lachrymal trouble, encouraging results were obtained from largin injections.

When applied to the conjunctiva, largin causes little if any pain. It is even more likely than lunar caustic or protargol to stain the palpebral conjunctiva of an indelible light brownish hue.

The writer presents the following *conclusions:* "The application of largin, even in concentrated form, is painless, but, when prolonged beyond a few weeks, may stain the conjunctiva. It acts well in blepharo-conjunctivitis, and in some cases of dacriocistitis. It is an efficient substitute for silver nitrate in any of the conjunctival inflammations associated with the Koch-Weeks bacillus, such as acute infectious ophthalmia and acute or subacute trachoma. It acts admirably as a temporary remedy after any of the operations commonly practised for the relief of trachoma, In gonorrhoeal ophthalmia, on the contrary, it is, in my experience, distinctly inferior both to protargol and to silver nitrate. In diplo-bacillary conjunctivitis, too, it does not succeed so well as zinc sulphate. In short, largin seems likely to gain a permanent place among the somewhat restricted number of remedies employed in every day eye work."

**Further Notes on the Use of Protargol in Ophthalmic Practice.**

ALT, ADOLF, St. Louis. (*American Journal of Ophthal.*, February, 1900.) The writer believes that protargol has not been sufficiently appreciated by ophthalmologists in this country; on this account he again draws attention to its usefulness, of which he has become convinced after daily use during the last two years. He points out its advantages over nitrate of silver, viz., that it causes little, if any, pain and penetrates more deeply into the tissues.

In catarrhal conjunctivitis, particularly acute forms, Alt finds that a 2 or 3 per cent. solution of protargol, applied freely, reduces inflammation at least as effectively, and sometimes more quickly than nitrate of silver. He sees no advantage in strong solutions (10 to 50 per cent.) as recommended by some writers. In gonorrhœal conjunctivitis of the new born as well as of adults, protargol has given the writer great satisfaction, and at the same time has avoided much pain to the patient.

Contrary to the experience of some observers, Alt found protargol as effective as any other remedy in the treatment of the early stages of trachoma as well as the catarrhal condition remaining after expression. In dacriocystitis it was injected into the canal with undoubted benefit.

The claim that protargol does not cause argyrosis of the conjunctiva is denied; but the discoloration, instead of showing the dirty-grayish or even blue-black appearance, has but a yellowish-brown tint. In three or four cases this argyrosis disappeared within three months after first notice.

### Ocular Therapeutics (Euphthalmin).

HALE, ALBERT B., A. B., M. D., Chicago. (*Chicago Medical Recorder*, Feb., 1900.) In the course of an article with the above mentioned title, Dr. Hale recapitulates our knowledge of euphthalmin and adds his own experiences with this new mydriatic. He tabulated 150 cases in which he used the 10 per cent. solution of euphthalmin. In 5 cases he watched the effect in accommodation and reports that his results agreed with those of Treutler and Winselman (*Therapist*, Aug. 15, '98) though differing from those of Jackson (*Ophthalmic Record*, July, '99), as shown by the following table.

Table showing cycloplegic effect of Euphthalmin:

The dose in each case was 1 drop twice at 10 minute intervals. Euphthalmin 10 per cent.

| | | | P. P. | | | |
|---|---|---|---|---|---|---|
| | Age. | Refractive state. | 1 hr. before use of drug. | 1 hr. after, about max. dilatation. | Duration of dilatation. | Decrease in Accom. |
| A B | 9 | Hy. | 8 cm. | 10 cm. | 2 hrs. | 2.5 D |
| C D | 18 | Hy. | 10 cm. | 12 cm. | 2 hrs. | 1.66 D |
| E F | 30 | Hy. and Astig. | 12 cm. | 13 cm. | 3 hrs. | 0.56 D |
| G H | 45 | Presby. Em. | 22 cm. | 25 cm. | 2 hrs. | 0.54 P.M. |
| I J | 63 | Myopic. 1¼ D | | | 4 hrs. | 0.00 |

"Its cycloplegic effect may therefore be eliminated, and nothing is left but its mydriatic effect. I found this in every case quite decided enough for all purposes. Even compared with atropin in one or two cases I could not see that the latter drug offered any noticeable advantage, and I now therefore depend more and more upon euphthalmin for diagnostic purposes. Probably for routine use, especially in the hands of the general practitioner, the 5 per cent. solution is strong enough, as Vossius (Deutsche Med. Wochenschr, 1898, No. 38) uses a 2 per cent.; Darien (La Clinique Ophthal., April, 1899), Schneider (Zeitschrift fur pract. Aerzte, March 15, 1898), and Jackson (Ophthal. Record, July, 1899) a 5 per cent. solution. My own conclusions, independently reached, agree most gratifyingly with those of Treutler and Winselmann. To epitomize with them, therefore, I assert:

"1, Euphthalmin (5 to 10 per cent. water solution) produces no subjective symptoms.

"2. It causes practically only mydriasis, pronounced, but of short duration, which shows itself, as a rule, in 30 minutes; earlier, therefore, than in other drugs.

"3. Its effect shows itself earlier in youth than in old age, but the difference is negligible.

"4. It has no effect on ocular tension; at least no contrary reports have as yet appeared.

"5. It causes no hyperemia or ischemia of conjunctiva, nor has it any effect on corneal epithelium.

"6. Its influence on accommodation, especially in such cases as the general practitioner would most probably use it, is absent.

"7. The normal condition of pupil is rapidly restored.

"8. It is apparently nonpoisonous.

"For the general practitioner, for the neurologist and for office or bed side use of the ophthalmologist, I cannot say enough to praise the use of euphthalmin."

### The Anesthetic Properties of Nirvanin.

ELSBERG, C. A., *(N. Y. Med. Journ.*, Jan. 13, 1900.) The writer tested the anesthetic properties of nirvanin, employed according to Schleich's infiltration method of local anesthesia, and made comparisons with solutions containing the anesthetics hitherto used for this purpose, namely cocain or eucain B in the strength of 1 to 1000. He investigated its toxicity by experiments on rabbits. The stability of a solution of nirvanin was tested by repeated boiling for various periods of time. In regard to the antiseptic properties of nirvanin he found that a three per cent. solution, infected with a culture of the bacillus pyocyaneus, became sterile in three hours.

Elsberg's experience with nirvanin extends over eight months, during which time he has used it in numerous minor operations, such as the opening of abscesses, extirpation of tumors and glands, removal of sequestra of bone and amputations, and he has never seen a case of poisoning. In general, he recommends a 1 to 500 solution, but if the operative area is small or inflamed a one per cent. solution can be used. Anesthesia is immediate, comes on painlessly and lasts from fifteen to forty minutes. Nirvanin, he finds, has no irritating effect upon the tissues and never interfered with healing by primary union. The technique of infiltration with nirvanin differs in no manner from that with Schleich's solution.

The author summarizes the results of his observations as follows:

"1. Nirvanin has distinct and valuable anesthetic properties when injected into the tissues according to the infiltration method.

2. Nirvanin is ten times less poisonous than cocain and more than three times less poisonous than eucain.

3. It has distinct antiseptic properties; a solution of one per cent, or more can be kept as a stock solution and will remain sterile.

4. It is a stable compound and can be boiled a number of times without diminishing to any degree the anesthetic properties."

[I investigated the anesthetic effects of nirvanin when applied to the cornea, using for this purpose solutions varying in strength from one to four per cent. My experience demonstrated the fact that this anesthetic is not a desirable one for use in this manner. I found the anesthetic effect very limited and unsatisfactory. The solutions also caused considerable irritation.—J. W.]

### Chloretone (Tri-Chlortertiary—Butyl Alcohol) in Ophthalmic Practice.

MORTON, H. McI., Minneapolis. (*Ophthalm. Record*, March, 1900.) After six months' observation upon the action of the drug chloretone the writer thinks that it has a distinct value in ophthalmic practice.. "This value lies in its antiseptic properties combined with a mild anesthetic effect, and without affecting the pupil or the accommodation. This unusual combination of qualities renders the drug useful in two distinct ways at least: first, as a very desirable anesthetic in the removal of foreign bodies from the cornea; second, as a conservant to the various solutions used by the eye surgeon."

In the first of these indications, the writer prefers chloretone to cocain on account of its markedly antiseptic properties, the absence of mydriatic effect and because it does not affect the corneal epithelium. The anesthetic action of chloretone is, however, limited to the superficial layers of the cornea and therefore is not serviceable in operations. When combined with cocain, the anesthetic effect of the latter is markedly prolonged.

As a conservant to other drugs, the writer recommends chloretone especially for the preservation of suprarenal extract. He adds about one drachm of the saturated solution of chloretone (1 per cent.) to six drachms of suprarenal capsule in watery solution (gr. x to ℥i); this "keeps the solution for a convenient length of time and without fungus formation, or bad odor."

As a collyrium, the writer prefers chloretone in saturated solution, to boracic acid, in acute inflammatory condition of the conjunctiva, and in diseases of the lacrimal sac and duct, as it has a more distinct antiseptic action than boric acid and, at the same time, is more sedative.

# ABSTRACTS FROM RECENT ENGLISH COLONIAL LITERATURE.

BY FRANK ALLPORT, M. D.

CHICAGO, ILLS.

### Notification of Ophthalmia Neanatorum.

POCKLEY, F. ANTILL. (*Australasian Medical Gazette*, Sept., 1899.) A plea that, considering the serious results to the community of neglected cases of ophthalmia neonatorum, both from a commercial and humanitarian point of view, that ophthalmia neonatorum be included in the list of compulsory notifiable diseases. In New South Wales any woman, educated or uneducated, has a right to be a midwife and she ridicules the idea of referring a case of "sore eyes" to a doctor, hence the extreme number of totally blind in this country resulting from ophthalmia neonatorum.

### Notes on a Case of Pulsating Exophthalmos.

MILLS, ARTHUR, M. B., Sidney. (*Australasian Medical Gazette*, Sept., 1899.) Dr. Mills reports a case in which he makes a diagnosis of pulsating exophthalmos caused by a communication between the interior carotid and cavernous sinus. Patient was suddenly seized with great pain in right temple and great whirring noises in head. There was pulsation of the eyeball, a bruit over it and over the head, a proptosis and paralysis of external rectus muscle. All of which signs, together with the pain and noises, disappeared upon pressure on the carotid. There was also edema of the right lower lid and marked congestion of the conjunctival veins. Fundus showed engorged and tortuous veins. A mere aneurism of the internal carotid, the author thinks, would not account for such sudden marked tinnitus unless it were of large size, and if it were of such large size there would have been pressure upon the nerves which lie in the wall of the sinus (e. g. the third, the fourth, and the ophthalmic division of the fifth). The marked engorgement, edema of lid, etc., could be caused by obstruction of return flow of blood in cavernous sinus. There could have been an endarteritis with gradual weakening of the wall and a final bursting of the artery into the sinus. This would explain all signs and symptoms. The common carotid was tied (the internal was too dilated). The bruit disappeared, the exophthalmos was diminished, movements of the eyeball were more free, and paralysis of the external rectus disappeared. The patient died about three weeks after the operation and a specimen was obtained showing the intracranial portion of the internal carotid and cavernous sinus. The diagnosis was proven by finding a small hole in the internal carotid communicating with the cavernous sinus.

### Eyesight in Children under Colonial Conditions.

FERGUSON, H. LINDO, M. A., M. D. Dunedin, N. Z. Dr. Ferguson draws his conclusions chiefly from his private cases. He finds a peculiar freedom from school myopia among the children in New Zealand; not over *one* per cent. of school children who seek the advice of the oculist are myopic: not because of especially good conditions in the way of light, good print, or good desks, but because of a racial immunity from myopia. The largest class of cases of eye troubles was that which included accommodative troubles with hypermetropia, such as swimming of print, pain on accommodation, frowning, blepharospasm, and similar distresses. The refractive errors in these cases were small, many not more than 0. 5 D., so that there seemed to be evidence of insufficient nerve force for the accommodative effort. He calls attention to the difference in the sexes in this class. In 175 cases 107 were girls and 68 boys. In boys this evidence of nervous breakdown steadily increases from the time they enter school until the age of nine or ten, remains stationary until fourteen, then decreases to $^2/_3$ highest rate and remains there. In girls up to nine the incidence is less than in boys, but $^1/_3$ of all cases in both sexes are girls between $11^1/_2$ and $15^1/_2$ years. He claims the fault to be partly in the educational system of promotion by examination and educational scholarships obtained by competitive examinations.

### Case of Probable Syphilitic Deposit in, or in the Immediate Neighborhood of the Optic Commissure.

TAYLOR, W. F., M. D., Hon. Ophthalmic Surgeon of

Brisbane Hosp. (*Australasian Med. Gazette*, Dec. '99.)

The case was a laborer 31 years of age. Three years previously his vision became impaired and continued so for two months, when it improved until three weeks ago, when a glimmering in the eyes came on and now he cannot see well in day time but sees better in twilight and by lamplight. He had pains in the head for a week before he noticed the dimness of vision.

V. R. E. cannot count fingers,
V. L. E. $^5/_{30}$, Jg. 16.

Both discs were pale indicating that some atrophy of nerve fibres had set in. There was no increase in tension, movements of the eyeball were not affected, and pupils' reacted to light and to accommodation with convergence. Diagnosis was probable syphilitic deposit in chiasma. Patient was placed on antisyphilitic treatment and vision slowly improved until at end of four months.

V. R. E. = $^5/_5$, Jg. 1 at 22 cm.
V. L. E. = $^5/_5$, Jg. 1 at 22 cm.

### Massage and the Relief of Eye Strain in the Treatment of Glaucoma.

GOULD, GEORGE M., Philadelphia, (*Canadian Journal of Med. & Surg.*, Nov. '99.) Dr. Gould recites several cases in which he has tried this treatment with very flattering results. He places especial emphasis upon his belief that the fundamental cause of the disease in a large majority of cases is long continued preexisting eye strain increased beyond endurance by presbyopia and that few cases are seen in eyes cared for by a skilled refractionist prior to and during the glaucoma age. One case, a woman, 59 years, had been treated for 6 years for glaucoma. Tension R. E. = normal, media clear, glancomatous cupping, and V. $^{20}/_{200}$, not improved by lenses — L. E. T. + 1 or + 2, and vision reduced to finger counting, disc typically cupped. Massage of both eyes was instituted and in 2 days tension was hardly above normal, with vision much improved; patient was again refracted and

R. E. + S. 2.75 = $^{20}/_{40}$.
L. E. + S. 2.00 + C. 1.00 ax. 150°=$^{20}/_{30}$.

After glasses were fitted massage was discontinued and up to present time V. = $^{20}/_{30}$ and tension is normal.

Best results are of course obtained when the damage is still mostly functional, but even after great organic damage and atrophied tissues make amblyopia permanent and lenses of course do no good, the eye may be kept quiet and enucleation prevented by routine daily massage. The techinque is simple and may be carried out by the patient or nurse. He begins by alternate palpation as in estimating tension, but slowly, and movements increase slowly and softly and the release of pressure is gradual not sudden. Palpation should be through upper lid with eyeball in positions of extreme adduction, normal forward looking, extreme abduction, and extreme depression; in extreme elevation the lower lid is used. In this way $^3/_4$ of the globe is operated upon. From 3 to 5 minutes is usually required to bring about normal tension.

### Recurrent Paralysis of the Oculo-Motor Nerve.

STIRLING, J. W., M. B., (*Montreal Med. Journal*, Oct., '99.) The case was of a girl aged 14 with hereditary tendency to nervous instability and history of attack of diphtheria two years previous, followed by ptosis of left upper eyelid and double vision. Since early childhood she has had repeated sick headaches with double vision, and near vision with left eye has been defective for two years. When first seen she showed paralysis of 3rd nerve in all its branches except to the sphincter pupillae. Pupil widely dilated but reacted slowly to light and on convergence but accommodation was wholly paralysed and eyeball devergent. V. R. E. $= ^5/_5$ pupil active and accommodation good, V. L. E. $^5/_9$ pupil sluggish, widely dilated, accommodation nil–with $+ 5 =$ J 1 at 8 in. 2 months later all phenomena had disappeared except pupillary and accommodative. The exacerbating type of disease and the experience of others leads the author to think there must be an organic lesion and most likely in nerve trunk.

### Some Retinal Complications in Chlorosis.

KINGHORN, H. McL., M. D. (*Montreal Med. Journal*, Jan. 1900.) Dr. Kinghorn recites 2 cases of chlorosis with optic neuritis and retinal hemorrhages, and one with retinal hemorrhage. There was no history or evidence of any disease except chlorosis. The haemoglobin was low, 37% in one, 42% in another. The loss of vision was complete in one eye always. The patients were placed upon Blaud's mass and mercurial inunctions. As soon as the blood record was brought up to an average per cent, the retinal complications disappeared. These points were common to all three cases.

1. Only one eye was affected.
2. In all cases onset was sudden.
3. Rapid improvement under iron.
4. Neuro-retinitis and hemorrhage occurred when disease was well established.

The author also notes that neuro-retinitis is so frequently associated with syphilis that the administration of antisyphilitic treatment should be the rule in all cases of sufficient age to make acquired syphilis possible.

# ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

By Robert L. Randolph, M. D.,

BALTIMORE.

### The Operative Treatment of Complicated Cataract.

**Gutmann, Dr. G.**, Berlin. (*Archiv. für Augenheilkunde*, December, 1899.) Gutmann gives us a long and comprehensive study of this subject, and reports forty-five cases in which the cataract was a complicated one.

In fourteen eyes, for example, there was excessive myopia and chorio-retinitis, with more or less liquefaction of the vitreous. In two eyes there were atrophic changes in the retina and optic nerve. In seven eyes there was detachment of the retina. In ten cases the cataract was shrunken, and in five of these ten there was occlusion of the pupil. In two cases there was irido-choroiditis with anterior and posterior polar cataract. Two cases were characterized by the presence of diffuse corneal opacities and posterior synechiae. In two cases there was disseminated choroiditis and in two others retinitis pigmentosa. In thirty-four of these forty-five eyes the vision was improved, in six cases there was no change and in the remaining five the vision was worse after the operation. I think we may conclude from Gutmann's report that the existence of disease of either the anterior or of the posterior part of the eye is no contraindication to the extraction of the cataract, and that in seventy-five per cent. of such cases improvement in vision may be hoped for. Such results, it is needless to say, are in large measure to be attributed to a successful aseptic technique.

### The Part Played by the Scleral Scar in Operations for Glaucoma.

N. **Andogsky** and P. **Selensky**, Drs. St., Petersburg. (*Archiv. für Augenheilk*, February, 1900.) The experiments were chiefly for determining whether filtration took place through the scar, and, if so, to what extent. The experiments were made on rabbits, and the animals were closely studied before they were killed and later a microscopic examination was made. It is not necessary to give the details of the technique, but it is sufficient to state that under certain circumstances the effect of the scleral section is actually to accelerate the outflow of aqueous through the wound, in other words to bring about a marked change in the drainage conditions of the anterior chamber. It was shown that the contents of the anterior chamber in the region of the scleral scar passed directly into the substance of the scar, being partly absorbed by the bloodvessels of the scar and partly by the system of blood and lymph vessels as under normal conditions. It was shown that not only does fluid pass readily through the scar, but that particles of India ink will do the same. This, though, depends largely upon the age of the scar. The scar would be permeable to such particles from eight to forty days, but after this time microscopic examination failed to reveal their presence in the scar. It is clear from this that while the scleral scar does filter it possesses this property for only a limited time, and this is no doubt true in the case of human beings.

### Endemic Bath Conjunctivitis.

FEHR, DR., Berlin. (*Berliner Klinische Wochenschrift, No. 1*, 1900.) It will be remembered that some months ago a report was made by Schulz of a number of cases of trachoma among those who were in the habit of frequenting a certain swimming pool in Berlin. Fehr reports forty more cases which were observed in Hirschberg's clinic. The affection was evidently a very contagious one caused by bacteria which had found a suitable medium for their development in the swimming pool. The clinical symptoms did not resemble exactly those seen in the conjunctivitis caused by either the Koch-Weeks bacillus or the Morax-Axenfeld diplobacillus, differing from these varieties of conjunctivits in that the inflammatory symptoms are not so violent. Even in the worst cases there was no swelling of the lids and there was little or no secretion. Burning and lachrymation were present but never in such degree as to interrupt or rather interfere with one's working capacity. The affection bore a certain resemblance to atropin conjunctivitis. Bacteriological examinations have thus far revealed nothing positive. Fehr thinks that the rapidity with which the cases yielded to treatment (on an average from four to six weeks) is proof positive that the disease cannot be regarded as trachoma. On this point it will be seen he differs from Schulz.

### Investigations Relative to the Value of Some New Antiseptics in Infected Corneal Wounds.

(From the clinic of Prof. von Michel, Würzburg.) DR. HAUENSCHILD, Würzburg. (*Münchener Med. Wochen.*, Jan. 30, 1900.) The experiments of the author were made for the most part upon rabbits. The corneæ of the animals were usually inoculated with virulent cultures of the staphylococcus pyogenes aureus. The infected wounds were then irrigated with one, five, and ten per cent solutions of protargol with one and two per cent solutions of silver nitrate and finally with 1:100 and 1:5000 solutions of Hydrarg. oxycyan. The results showed that the organisms were apparently uninjured by the antiseptics employed.

He concluded however that the Hydrarg. oxycyan. was for practical purposes the most valuable of these antiseptics and that irrigation with this agent kept up under tolerably high pressure and for some little time would kill the organisms. He acknowledges the value of protargol but does not think it is entitled to the reputation which it now enjoys. His experiments show the futility of present methods of conjunctival disinfection.

### A Contribution to the Etiology and Therapy of Episcleritis Periodica Fugax.

STÖLTZING, DR. W., Hersfeld. (*Münch, Med. Wochenschr*, 13 Februar, 1900.) Stöltzing discusses this interesting disease and refers very fully to the work of Fuchs and others in this connection. He reports one case. The author is inclined to the opinion that we have in these cases an instance of vaso-motor irritation in the localization of which the nerves appear to be a factor partly because of the sharply marked trigeminus neuralgia and on account of the intense focal pains which are often out of proportion to the objective symptoms. He agrees with Fuchs in thinking that treatment as a rule is useless though he thinks that iodid of potash is the most valuable of the remedies. In the cases which he reports this was the only agent which seemed to have any beneficial influence upon the disease.

### The Treatment of Deep-Seated Infected Injuries of the Eye.

BAEUMLER, DR. E., Halberstadt. (*Klinische Monatsblt. für Augenheilkunde*, January 1900.) The author reports three cases of penetrating wounds of the eye involving among other parts the lens, It is just such cases which later on demand enucleation and which often end in panophthalmitis. The cases which he reports show in a marked way how the infection may be cut short at once by repeated applications of the galvano-cautery. All suspected parts of the eye are subjected to the cautery. It was of course impossible to reach all of these parts. The cornea was probably the only part which was completely sterilized and this was done by destroying everything in the wound which looked suspicious. The wire was carried well into the anterior chamber and even into the lens. In all of the cases there was an extensive wound of the cornea and iris with rupture of the lens capsule. Hypopyon was present in one case, and decided minus tension in another. In every case the eye was saved and with useful vision.

### Gangrene of the Lid Following Continued Ice Application.

PLAUT, DR. (*Klinische Monatsblt. für Augenheilk.*, Januar, 1900.) The case related by Plaut was that of a girl who suffered from a conjunctivitis after some sand had flown into her eye. The symptoms were simply those of a violent conjunctivitis with slightly oedematous lids. The physician who was called in ordered ice applications. The girl's mother filled an ordinary pig's bladder with crushed ice and allowed it to lie on the lids uninterruptedly for twenty-four hours. At the end of this time the lids were enormously swollen and lay in close contact with the eye. The skin of the lower lid was extensively necrosed and of a livid color. The upper lid did not appear so extensively involved. Bacteriological examination showed the presence of staphylococci and streptococci. Constitutional symptoms were now present showing themselves in elevated temperature and swollen preauricular glands. The treatment consisted in the application of a salve and a bandage. The necrotic portions were thrown off and it turned out that only the external part of the lids had been involved, the conjunctiva and tarsus being free. Without doubt the gangrene resulted in this case from the freezing. It is evident from a study of the case that it is dangerous to apply ice directly to the skin for any great length of time. Either a cloth or compress or greasy rag should be placed next the skin.

### A Case of Pannus Trachomatosus Cured by an Intercurrent Erysipelas.

BACK, DR. S. (*Klinische Monatsblt. für Augenheilk.* Februar, 1900.) The patient was a girl who had been under treatment for some time for trachoma which was present in marked degree in both upper and lower lids. The corneae were covered with a thick pannus. The patient was decidedly strumous in appearance, She was put through the routine treatment, roller forceps etc. and slight improvement resulted. Erysipelas developed without any apparent cause at the upper and right side of the nose. The inflammation spread over the face and skull and attacked the lids so that they could not be opened. Fourteen days later when the erysipelas had disappeared and when it was possible to open the lids again it was noticed that with the exception of one or two vessels the pannus had almost entirely disappeared and that the dense corneal cloudings had cleared in a marked degree. The author concludes that the toxins of erysipelas were present in the lymph channels and it was these toxins which caused the rapid disappearance of the pannus. An analogous phenomenon is witnessed in the application of the jequirity bean to gonorrhoeal ophthalmia.

### Extensive Tuberculosis of the Conjunctiva and Cornea Cured By an Outbreak of Facial Erysipelas.

KUHNT, H., Konigsberg, i. Pr. (*Zeitschr. für Augenheilk.* Februar, 1900.) In connection with the foregoing abstract, mention should be made of a case of tuberculosis of the conjunctiva and cornea in which the tuberculous process was dissipated by the appearance of facial erysipelas. The patient was a child of nine years and its left lower lid in the region of the tarsus and fold of transition was covered with grayish-red granulations which extended over the entire temporal half of the eyeball. It was impossible to say how far these changes extended up into the fornix as the lid could not be satisfactorily everted. The cornea was completely covered with a pannus like tissue in which grayish nodules were to be seen. Inoculation experiments and bacteriological examination showed it to be a tuberculous process. The child was treated locally and internally for two months but with apparently no benefit. Facial erysipelas broke out at this time and the child did not recover from this for a month when it was found that the most pronounced improvement had taken place in the eye symptoms. The granulations in large measure had disappeared and the cornea had begun to clear up. Massage with iodoform salve was then instituted and kept up for several weeks. A few months later the child had useful vision.

### The Sudden Development of Cataract (double) in a Woman After Hemorrhage.

PIHI, DR. A., Gothenberg. (*Centralbl. für praktische Augenheilk.* Januar, 1900.) The case was a woman of thirty-three, who had been apparently perfectly healthy prior to an attack of typhus which left her rather anemic. Her menses were rather irregular. It appeared that she had gone to a dentist who had extracted a number of roots. This was followed by profuse bleeding which necessitated tamponing. About this time she was laid up with her monthly sickness and lost a good deal of blood. As a result she was much prostrated. Improvement followed and she was soon able to sit up, but in a few days without apparent cause the old roots began to bleed very freely and she lost a large quantity of blood and on attempting to read she discovered that the print was very dim and appeared as though enveloped in a mist. An examination of her urine revealed nothing abnormal nor did further examination show the presence of any organic trouble whatever. So far as the eyes were concerned a long story may be cut short by stating that the lenses were almost entirely opaque. Light perception good. She was operated upon some weeks later first by discission and then later by extraction. The eye was left in an irritated condition but finally became a useful organ. The author discusses the possible etiological moments at the bottom of the trouble and concludes that she probably always had had a zonular cataract and that the complete opacification of the lens had been brought about by the profuse hemorrhage which had had the effect of disturbing the nutrition of the lens. This in view of the fact that its progress to maturity was even more rapid than what we see in diabetic cataract and even in traumatic cataract.

### The Application of the So-Called Hollow Bandage.

WOLFFBERG, DR., Breslau. (*Wochenschrf. für Ther. und Hygeine des Auges.*, 8 Februar, 1900.) Wolffberg again calls attention to the open treatment of eyes not only after operations but in diseases, as iritis, etc. He does not however depend upon the lids for a bandage as does Hjort, of Christiana, but prefers a protective apparatus which somewhat suggests the wire net of Fuchs-Czermack. This protective bandage is composed of parchment paper which has been dipped in glycerine and which has the property of taking up water without losing its own firmness. This is moulded into such a shape as to fit closely to the border of the forehead, temples, bridge of the nose and cheeks and to cover the eye completely without interfering with the movements of the lids. He had tried various agents with which to keep the bandage adherent to the skin but all were more or less objectionable till he employed the glycerine jelly. This he smears well on the borders of the protective paper all the way round and it keeps the apparatus closely adherent to the skin and without irritating the latter.

### Glycerine-Tragacanth Jelly.

WOLFFBERG, DR. (*Ibid*, 25 Januar, 1900.) In connection with the foregoing communication of Wolffberg mention may be made of another suggestion by the same author. The formula calls for tragacanth 5,0, glycerin 2,0, Aq. ad. 100,0. This mixture Wolffberg has found useful in the treatment of fissures at the angles of the lids, of scaly and of moist eczema and also a protective of a sensitive skin against the tears and atmospheric influence. It is also used as a vehicle for powders and salves. It can be rubbed over the upper and lower lid and a soft pad of linen or cotton when applied will adhere closely to the lids and act as a bandage.

### Exophthalmus Intermittens.

HITSCHMANN, DR. RICHARD. (*Wienerklin. Woch.*, 3, 1900.) Under this title the author describes the case of a young man twenty-three years old. Thus far only twenty cases of this character have been reported and all of them were young people and in all the affection was one-sided. In the case reported by Hitschmann there was an abnormal movement or mobility of the eyeball in an antero-posterior direction resulting from the ever changing conditions prevailing in that part of the orbit posterior to the eyeball. By this is meant such variations in the volume of the orbital contents as would be caused by circulatory changes having their origin in the jugular veins. As a rule there is no disturbance in the vision though this may be slight when the exophthalmos has reached it height. The same may be said with regard to pain which is only present in insignificant degree at the height of the exophthalmos. In the case reported when the patient was lying down, the right eye occupied a position which amounted almost to enophthalmos while at the height of the exophthalmos the corneal summit was at least 15 m. in front of that of its fellow eye while there was marked swelling of the conjunctival and ciliary veins as well of the lower lid. These phenomena could all be brought about by compressing the right jugular vein or by any movement on the part of the patient which would cause an obstruction of the flow of the blood from the head. Such cases according to van Duyse and others are to be regarded as a tropho-neurosis due in all probability to some lesion of the sympathetic. It must be said however that this part of the subject is involved in great obscurity.

### A Guide for Incising the Tear Sac from the Outside.

TERSON, DR. A., Paris. (*Die Ophthalmolog. Klinik*, 5 Marz, 1900.) The author discusses the older methods of laying open the tear sac devised by Petit, Monro and others with all of which we are familiar. The substance of his communication may be stated as follows. Make the incision in the skin not more than 4 mm. and not less than 3 mm. from the inner angle of the lid and the tear sac will be struck with certainty. The individual peculiarities in this region are so trifling that one will practically never miss the goal.

### Malignant Pustule of the Eyelid and Eyebrow.

PRAUN and PROSCHER, DRS., Darmstadt. (*Centralbl. für praktische Augenheilk.*, Februar, 1900.) The first case was that of a woman, the wife of a man who sold old iron, goat skins and hair. She was usually in good health but had suffered for a year with blepharitis. She first noticed a swelling of the gland at the angle of the lower jaw and at the same time a pustule on the outside of the upper eyelid with a good deal of swelling of the surrounding part. The lid at this time was livid. There was slight pain but beyond this the general condition was good. Another small pustule formed near the first. The pustules were incised and cultures from them showed anthrax and a staphylococcus. The second case was also that of a woman. Here the pustule was located on the left eyebrow and was almost as big as a fifty cent piece and of a dark bluish red color. The superficial integument was gangrenous and the surroundings infiltrated. The pustule had been incised five days previously and this probably accounted for the negative result of the bacteriological examination so far as the discovery of the anthrax bacillus was concerned. This infection probably occurred in both cases, certainly in the first case from the effet of scratching or rubbing the lids. The author discusses the conditions which favor infection by anthrax; why, for instance, a local infection occurs in one instance and a general infection in another. Both cases recovered.

### The Type in Ophthalmological Journals from Hygienic Standpoint.

COHN, HERMAN, Breslau. (*Die Ophthalmolog. Klinik*, January 5, 1900.) Cohn deplores the bad print which he finds in the majority of eye journals, and gives a table in which are to be found the leading German eye journals with measurements of the type, the distance between the words and lines, etc. He concludes that the Petit-type should be excluded. The space line should never be smaller than 3 mm., there should never be more than twenty-two lines upon 100 cm. of paper. No line should be longer than 100 mm., and there should never be more than fifteen letters on a square centimeter. Cohn finds only three out of the ten journals which fulfil these requirements and these are the *Klinische Monatsblaetter für Augenheilkunde*, *Die Ophthalmologische Klinik*, *and Der Bericht der Versammlung der öph. Gesellsehaft.*" The print of the other seven journals from hygienic standpoint is to be regarded as very hurtful to the eyes and is doubtless in some degree responsible for the myopia so common among the German oculists. Cohn examined all the oculists at the Heidelberg Congress, in 1871, and later a similar examination was made in Berlin, and he found that more than half of them were myopic. He suggests that hereafter the Petit-type be banished, that every copy be printed a deep black, that the letters be thicker, and finally that contributors refuse to send contributions to these journals unless these hygienic rules be complied with.

### Balneotherapy in Diseases of the Eye.

OHLEMANN, DR. M., Wiesbaden. (*Wochenschrift für Ther. und Hygiene des Auges*, Nos. 21 and 22, 1900.) The author asks this question. In what way do either baths or mineral waters benefit those suffering with diseases of the eye? In the case of the baths certain factors are to be considered—for example, the temperature, the quantity, the different methods of application, that is to say, all the way from the cold baths to the Roman baths. In the case of the mineral waters, we consider also certain curative factors, physical and chemical, and with these must be reckoned the helpful influence of light and heat, the kind of nourishment, atmospheric pressure, etc. The kinds of eye affections which seem particularly adapted to balneotherapy are, first, the superficial and chronic affection of the lids, conjunctiva and cornea, such, for instance, as chronic blepharitis, blepharo conjunctivits and keratitis. The author speaks of the treatment of these affections in detail and recommends in this class of cases more particularly the drinking of mineral waters rather than baths, though he also advises washing the eyes in mineral water several times daily. Balneotherapy is also useful in diseases of the iris, sclera and choroid, and in this group we find a large representation from the gouty, rheumatic, scrofulo-tuberculous, and syphilitic. In connection with this group of cases the author lays particular stress upon the importance of the baths. He goes on to mention two other eye affections which experience has taught him are benefitted by balneotherapy, such for example as diseases of the retina and of the nerves of the eye, paralysis of rheumatic origin, optic nerve atrophy and the toxic amblyopias. He gives the rules of conduct to be followed for every class of eye disease and he mentions also many of the most valuable mineral springs and baths which are suitable for individual cases.

### Retinal Detachment.

GABLER, LUDWIG. (*Wochenschrf. für Ther. und Hygiene des Auges.* March 8, 1900.) Gabler has given us the result of the treatment of this class of cases during the last ten years in the eye clinic in Budapest. In this time 76,402 eye cases were seen, and 120 of these were affected with detachment of the retina. In practically all the cases high myopia was present. Among the 120 cases 44 were treated. Puncture of the sclera was performed twelve times and four of the patients were improved and in eight the condition remained unchanged. In eleven cases iridectomy was performed with the result of improving five cases, while three remained unchanged and the remaining three grew worse. In the cases (seven cases) in which puncture of the sclera was associated there was no change. In the remaining cases pilocarpin injections, iodid of potash, inunctions, were all employed but with little or no effect, and the same may be said of one case where injection of tinct. of iodin was employed.

### The Pupillary Reaction in Convergence and Accommodation and also when Surfaces on the Retina of Different Areas are Illuminated with a Constant Quantity of Light.

VERVOORT, DR. H., Leiden. (*Von Graefe's Archiv. für Ophthalmologie*, Bd. XLIX, Ab. 2.) The author goes over the investigations of Donders, de Ruyter, Hering and others with reference to the pupillary reaction under certain conditions. His experiments are thorough and valuable, and his conclusions are as follows:

1. The pupillary reaction which is seen during the fixa-

tion of objects at varying distances associates itself with convergence only and not with accommodation. 2. Most of those who have made investigations upon this subject hold that the pupillary reaction is closely associated with accommodation, but they have made the mistake in not taking into account the change of the convergence. 3. The light reaction of the pupil is dependent only upon the total quantity of light which passes into the eye, independently of the size of the retinal area which is illuminated. 4. A difference of 1/9 mm. between the diameters of two pupils can be observed. 5. A change in the diameter of the pupil of 1/10 mm. cannot be readily appreciated.

### The Lasting Results of the Operation for Myopia.

VON HIPPEL, Prof., Halle. *(von Graefe's Archiv für Ophthalmologie*, Bd. XLIX, Ab. 2.) A very important question which he discusses in his article and the one which chiefly interests us at this stage is that which refers to the occurrence of retinal detachments. In connection then with this point I might refer to the statements of the author. He analyses 184 cases which he operated upon during the last six and a half years. He relates in detail the eleven cases in which he met with detachment of the retina. In three of these cases the operation can certainly not be regarded as instrumental in bringing about the detachment as the patients enjoyed several years of good sight after the operation. In two of these cases a vitreous thread was incarcerated in the cornea and this probably led to the detachment. In the other six cases it was impossible to directly trace the detachment to the operation. The author then recalls the fact that retinal detachment is not infrequent in high grades of myopia even where no operation had been performed. He gives a number of statistics which bear upon this aspect of the question, and particularly a study of the cases seen in the eye clinic of Halle from 1884 to 1899. It might be of interest to note the fact that in fifty-four cases where no operation was performed retinal detachment occurred four times that is to say a little over 1% oftener than when the operation was performed. The author then goes on to speak of the course of choroiditis in these cases as to whether the disease is brought to a standstill by the operation as some think, also as to the danger of glaucoma, all of which are points which have provoked not a little discussion and which need not be referred to here. It is evident however from von Hippel's contribution that he is a strong friend of the operation.

### An Encapsuled Hydrops of Tenon's Space.

LAGRANGE, Dr., Bordeaux. (*Die Ophthalmologische Klinik*, 20. Maerz, 1900). The following interesting case which finds only one parallel in literature, is reported by Lagrange. The patient was a man of sixty-four who for three months had noticed that the vision in his right eye was slowly but surely declining. At the same time he felt as though the eye were being slowly pushed out of the socket. When seen there was marked exophthalmos, the eye being pushed forward and outward. Between the eyeball and the upper, outer and lower border of the orbit a resistant tumor was felt which appeared to take in the entire base of the orbit. Only that portion of the orbit to the inner side of the eye appeared free, though there was a slight swelling at this point. Palpation at this latter part gave pain while over the region of the tumor there was no such sensation elicited. The intraocular tension was elevated, the pupil reacted feebly to light. The conjunctiva was edematous. The lids could be closed with difficulty. The movements of the eyeballs upward, outward and downward were abolished and vision was 1/25th. The ophthalmoscope showed optic neuritis and beginning atrophy. A diagnosis of sarcoma was made and it was determined to remove the tumor and probably the eye. Soon after cutting the external rectus and while endeavoring to separate the growth from its surroundings a clear fluid spurted out and the tumor disappeared. The field was irrigated with a weak sublimate solution and the muscle brought back into place secured and the wound closed. In six months the vision had mounted to 1/10th and the eyeball occupied its usual position. The author concluded that the tumor was a localized hydrops of Tenon's space.

### Myopia Operations.

SILEX, PROF. DR. P., of Berlin (*Therap. Monatschr.*, Nov. 1899) see also *Wochenschr. f. Therap. u. Hyg. d.*

*Auges*, Feb, 1900). The original article includes the literature of the subject to the end of May 1899; more than 120 essays. The author only recommends the operation for patients who are practically unable to earn a living on account of their short-sightedness. He shows the difference between real and "glass" myopia. The first is readily distinguished by a direct examination with the ophthalmoscope, also by skiascopy and by direct measurement of the far point, the latter of which is most exact and the best method for those who have had not great experience. For determination of the necessity for the operation he recommends measurement of the far point with ordinary reading type; or as this gives rise to an element of error in some patients who hold the letters closer than their far point on account of diminished visual acuity, he recommends the "dot tests" of Burchard.

For the dermination of glass myopia the weakest concave lens is used which gives the clearest vision in the distance. The distance of this glass from the eye is of considerable importance in determining the grade of the myopia. For instance in an exactly determined myopia of 20.0 D. (far point. 5 cm.) if the lens be 1.5 cm. away from the eye it necessitates a lens of 28,5 D. to correct it. With every millimeter which we reduce the distance of the correcting lens is away from the eye the strength of the correcting glass is weaker. He drops a 2% solution of cocain in the patient's eye and brings the glass up against the cornea or not more than 2 mm. away; a myopia of 20,0 D. above described is corrected by a lens 20,5 D. thus arriving closely at the exact amount of the myopia. These points should be reckoned in order to understand that one author finds a myopia of 22,0 D. after operation to result in emmetropia and another of 16,0 D. gives emmetropia.

The best results are obtained in a patient who becomes emmetropic after phakolysis, as he sees without any glass in the distance and needs but a weak concave lens of 4,0 D. for work. The optical condition of the patient should be estimated before operation. In a cataract patient who was previously emmetropic we give as a rule 10,0 or 11,0 D. for distance. The optical value of the removed lens is however not 11,0 D. but higher as we place the cataract glasses about 15 mm. in Front of the eye. The real myopia is always less than that shown by the correcting glass. For a long time analogue was drawn from the results of cataract operation whereby myopia of 13,0 D, should result in emmetropia after removal of the lens. It was likewise supposed that the myopic lens had a higher refractive value. But the above suppositions are false as has been shown by Schoen, Hirschberg and others. The lens is of the same optical value in emmetropia and ametropiar.

In order to determine the amount of ametopia after operation the following rule is given:—

Subtract 1/2 of the value of the correcting glass placed at 15 mm. in front of the eyes from 11,0 D. : 11 — 22/2 = 0 which is emmetropia, in a case where the refraction was corrected by 22,0 D. at 15 mm. Thus myopia 20,0 D. becomes 1,0 D. hyperopia and myopia 26,0 D. becomes myopia 2,0 D. If in the case of glass myopia of 22,0 D. with the lens at 15 mm. in front of the cornea it be used at 3 mm. then the myopia is reduced to 17,0 D. Considerable astigmatism of course renders such reckonings unreliable. Supposing the patient has a real myopia of 16,0 or 17,0 D. or more the following conditions are to be observed:

1. If the patient has one good eye, for instance is emmetropic, the author does not recommend operation.

2. If one eye has been lost in any manner, the operation should only be done on the other after great importunity by the patient.

3. Recent inflammatory diseases of the choroid or hemorrhages into it or the retina, irritative symptoms taking the form of glistening, lightning, etc. are contraindications. Others have operated in such cases and occasionally had luck, but such symptoms are often the forerunners of retinal detachment, especially when attended by vitreous opacities. As one cannot foretell this, it is better to wait a couple of months until the eye is quiet. Some persons have operated immediately in such cases, having perhaps very fine immediate results, but two or three months afterwards retinal detachment occurred and the patient will always say that the loss of sight was due to the operation; the surgeon is blamed throughout the life

of the patient and odium falls upon the operation.

4. The patient must feel himself practically helpless and that glasses were of not much use, that he must have relief and must beg for the operation.

5. The social standing should be considered in determining the necessity for better sight.

6. The age of the patient is of no consequence. The oldest case of the author's was 56 years.

In order to render the danger of infection least, the safest method should be chosen. In the case of children of 12 and 14 years, after atropinizing, the lens may be discided and the case left to nature. It is occasionally necessary to do two or three discissions afterwards. The course of the case is about the same as that of a lamellar cataract, which we treat as out patients in the same way and of which we are not afraid. In the course of three or four months the pupil is black and round and we have an elegant result. If necessary to produce a quicker effect, the lens may be freely discided and after a few days removed through a corneal incision. If it has not quickly become opaque a second discission may be done, a couple of days before the extraction. It is not necessary to remove all remaining particles of the lens. Prolapse of the vitreous readily occurs from unnecessary manipulation and is a very dubious complication for the safety of the shortsighted eye. Secondary cataract developing later may be discided after a couple of weeks.

In the case of adults of 40 years or more, he has done simple extraction without previous iridectomy or discission, but in all these cases secondary cataract followed. Sattler has recommended this procedure in young persons. The author has tried it in lamellar cataract, but has rereturned to the old method which is simpler and when all is considered, is much quicker.

For phakolysis, he keeps middle aged patients in the hospital from 14 to 16 days, making the discission on the first day, from 4 to 6 days later doing linear extraction, letting them go about ten days afterwards. For about a week later it is necessary to watch for development of secondary cataract, the treatment of which takes five or six days after the eye is quiet. The complications are prolapse of the iris, iritis, loss of vitreous, and increase of tension; with the latter he has had no experience. These are to be handled according to established rules. After one eye is done with, it is recommended to attend to the other in order to give the patient the advantages of binocular vision. *H. V. W.*

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

## QUARTER ENDING MARCH 31ST, 1900.

BY CHARLES A. OLIVER, A. M., M. D.,

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### The Treatment of Glaucoma.

**ABADIE, PARIS.** (*La Clinique Ophtalmologique*, Jan. 10, 1900.) Abadie who has given much study to the etiology and the treatment of glaucoma, reviews the therapy of the disease. His conclusions are:

In acute and sub-acute glaucoma with intermittent crises characterized by either the appearance of colored rings around points of light or temporary attacks of obscured vision, iridectomy should be immediately performed. Should this procedure fail, resource, he says, may be had to miotics; and in the event of failure of both procedures, resort should be had to ablation of the superior cervical ganglion.

In chronic simple glaucoma he prescribes bi-daily instillations of miotics; while occasionally in young subjects, an iridectomy may be performed. Should miotics arrest the disease nothing further should be attempted, but if the condition be merely retarded, a sympathectomy should be done.

Sympathectomy, the author believes, is the operation of choice in case of hemorrhagic glaucoma, and should be performed as early as possible. The procedure should be associated with the application of leeches to the temple combined with the internal administration of ergot and sulphate of quinine.

Finally, in all cases he says, in which the eye has been neglected, or by reason of the failure of other methods the disease has gone so far that disorganization of the eyeball is threatened; or if suffering should have become so intense that enucleation seems justifiable, sympathectomy may be performed with good reason for the hope that the pain may cease and the eyeball be saved.

### A Case of Bloody Infiltration of the Cornea.

JOCQS, PARIS. (*La Clinique Ophthalmologique.* Jan. 10, 1900.) In this case of Jocqs the eye was injured by a falling pine cone. The patient was not seen until three days later, at which time the organ appeared uniformly black in tint. As symptoms of irido-cyclitis appeared in the other eye an enucleation was performed. The lesion which seemed to have most bearing on the corneal condition, the author states, was a rupture of the sclerotic. He offers this condition as a reason for the probable explanation of the infiltration of blood into the cornea, although he believes that a simple rupture of a bloodvessel allowing the blood to infiltrate into the sclerotic might produce a similar state of affairs.

### Two Rare Cases of Paralyses of the Ocular Muscles.

LEPRINCE, BOURGES. (*La Clinique Ophtalmologique,* Jan. 25, 1900.) The first case seen by Leprince was that of a man who used tobacco and alcohol to excess with the result, according to the author's statement, that he produced an attack of retrobulbar neuritis in association with a paralysis of the left external rectus muscle.

A discontinuance of the use of tobacco and alcohol, conjoined with the employment of the constant current in association with full doses of iodide of potassium effected what appeared for all practical purposes, a cure.

The other case was that of a man who was struck in the back of the neck with an iron bar. This traumatism was followed by a period of unconsciousness that lasted for ten days' time. From the moment that the patient regained consciousness he complained of a diplopia while looking down and to the right. At the same time there was a palsy of the left arm and leg with a partial one of the left side of the face. Twenty-four hours later the general paralysis was so much relieved that the patient was allowed to leave the hospital in which he had been placed after the accident. An injection of the right eye which was noticed after the accident, lasted about a months' time. There was a right-sided ptosis with a homonymous diplopia when the right eye was turned down and out.

The diagnosis made was that of a complete palsy of the fourth pair of nerves with a partial paralysis of the third pair. Iodide of potassium combined with the application of the constant current was advised. Under this treatment the third pair paralysis disappeared, but the trouble in the fourth pair remained almost unchanged. The author places the probable site of the lesions of the oculo-motor at the position in which the nerve crosses the pyramidal fasciculus. The lesion of the pathetic nerve he says was not traceable.

### Congenital Ocular Lesions in A Child Whose Mother Suffered from an Attack of Typhoid Fever During the Latter Part of Her Pregnancy.

ANTONELLI, Paris. (*La Clinique Ophtalmologique*, Jan. 2., 1900.) Antonelli first saw the child when it was in its twelfth year. The ocular lesions were as follows: In each eye there were traces of cortical shreds with anterior polar cataracts which were probably due to a chorio-retinitis, the marks of which were very pronounced. The anterior polar cataracts and the cortical shreds were noticed by the mother about the time of the birth of the patient. With the exception that the child was undersized and somewhat thin he otherwise appeared normal. An older and a younger child were healthy. There were no sign of syphilis in the family.

### Ocular Hystero-Traumatisms and Pseudo-Hystero-Traumatisms.

BOREL, Neuchatel. (*Annales d'Oculistique*, January 1890.) Borel in a carefully written paper presents the study of several such cases that came under his care, giving a comparison between them and some examples reported by other observers. The article throws considerable light upon quite a number of obscure points in the diagnosis of the condition.

The apparent triviality of the original traumatism is a striking feature in all of the cases. In most of them the hysterical symptoms did not make their appearance until several months after the accident. The most marked instance was that of a young man of twenty-one years of age, built, to quote the Author, like the Farnese Hercules, and a great athlete, who received a foreign body in the cornea. This was removed and atropin was instilled. Grave hysterical symptoms set in and for a period of two years the patient was obliged to relinquish his work. Among the symptoms that occurred in this case were those noted in the following extremely long list: asthenopia, epiphora, hemihyperhydrosis, attacks of purplish discoloration of the face from congestion, loss of all sexual sense, contraction of the visual fields, paralysis of the extra ocular muscles, tonic and clonic spasms of the pectoral and calf muscles, pseudo-neuro-papillitis and pseudo-meningitis, large tracts of cutaneous anesthesia and hyperesthesia, changes in hand-writing, amaurosis, monocular diplopia, hemierythropsia, micropsia, pleurodynia, sciatica, spasm and paralysis of accommodation, insuffiency of convergence, photophobia, insomnia, and nightmare. Several of the cases reported he says followed railway accidents.

### Hemeralopia Treated by Injections of Physiological Serum of the Horse.

SANTOS-FERNANDEZ, JUAN, Havana, Cuba. (*Revue Generale d'Ophtalmologie*, Feb. 25, 1900.) Santos-Fernandez reports four cases of hemeralopia, two of which are new and two of which have been previously reported; all being cured by the use of the physiological serum of the horse. The dose employed for an adult was twenty cubic centimeters. From two to four injections were required to effect a cure. As the author states, four cases are too few to base any positive statements upon, but the results are certainly sufficiently encouraging to warrant further experiments with this form of employment of the material.

### Considerations of the Anatomy and the Treatment of Lacrymal Tumor (Pericystic Tumor).

JOCQS, Paris. (*La Clinique Ophtalmologique*, Feb. 25, 1900.) More than a year ago Jocqs expressed the opinion that the so-called lacrymal tumor was not a dilatation of the sac itself but was formed by a pocket in the subcutaneous tissue that was situated anterior to the sac.

Since that time he states that observations have confirmed this opinion. Usually the sac communicates with the socket by a small opening which permits of the escape from time to time of the contents of the latter by the way of the nose or the lacrymal puncta. He admits that he is still in doubt as to whether the opening exists from the beginning and is the means of extension of the infection to the subcutaneous tissues or whether it appears later. The existence of the pericystic tumor can be demonstrated by carefully opening the swelling on a grooved director which has been introduced through a small puncture. This is to be followed by packing the cavity for twenty-four hours in order to arrest any hemorrhage. If this is accomplished the anterior wall of the sac can sometimes be seen. It can be, however, made more prominent by distending the sac with some fluid injected through the canaliculi. Employing the indications arising from this view of the subject the author avoids destroying the sac while treating the disease. The tumor is carefully opened and cleaned with a concentrated solution of chloride of zinc. The wound is then packed with absorbent cotton and covered with a preparation known as traumatol in the form of either a powder or an ointment, This procedure is repeated several times. He states that as the sac is the original seat of the trouble it must also be treated. Its wall should be opened and sounds passed into its interior whether there is any contraction or not. This is to be done for a period of four or five days. At times it is well to employ a retained sound for a few days. This, however, must not be continued too long. The use of the sound is to be followed by the application of three per cent. solutions of nitrate of silver applied to the walls of the sac. This is to be continued until any communication between the sac and the tumor is closed. Naturally the pocket must not be obliterated until the closure has been accomplished. By continuing this line of treatment the author has been usually able to preserve a more or less patulous canal. In case the patient should be exceedingly annoyed by epiphora the lacrymal gland may be extirpated. A guarded prognosis, however, should be given as to the amount of relief which may follow this latter operation.

### Encysted Hydropsy of the Capsule of Tenon.

LAGRANGE, Bordeaux. (*La Clinique Ophtalmologique*, Feb. 25, 1900.) Lagrange reports a case of the above nature which had been diagnosed as a malignant tumor of the optic nerve. The eye protruded forward and slightly to the outer side. There was probably a great deal of pain, though the patient complained of but little. Visual acuity equalled one twenty-fifth of normal. The papilla was reddened and presented all of the signs of pressure. Tension equalled plus one. During an operation intended for the removal of the supposed growth, though fortunately, before the optic nerve was in any way interfered with, the actual condition of affairs was revealed by an outgush of a clear lemon colored fluid. The author gently scraped the walls of the sac with a dull curette and after exploring the cavity in search of an hydatid, closed the wound. The patient made a good recovery, leaving the hospital in ten days' time. Visual acuity had risen to one-tenth of normal acuity and there was no trouble with the movements of the eyeball. Several months later the patient was in the same condition.

### Amblyopia of Anemic Origin Cured by the Use of Subcutaneous Injections of Cacodylate of Sodium.

DE SPEVILLE. (*La Clinique Ophtalmologigue*, Feb. 25, 1900.) The patient of De Speville was a forty-three year old unmarried woman. With the exception of the fact that she suffered from anemia with the attendant circulatory symptoms, her general condition and previous history were good. About two weeks before placing herself under the author's care she was able to read with ease, but about this time her vision began to fail. When she was first seen her visual acuity in the left eye was reduced to the ability to count fingers at one meter's distance from the eye. The vision of the right eye was affected by reason of detachment of the retina which dated back about five years. The left eye presented almost no change in appearance except that the retina was slightly pale and the retinal veins were somewhat dilated. Subcutaneous injections of cacodylate of sodium were employed in the strengths of five centigramme doses. They were given in series of fifteen daily injections, with a rest of eight days between each series.

At the end of the first series the visual acuity of the left eye had risen to one-sixth of normal. At the end of the second vision, with the same eye had become normal for both near and for distance, while the circulatory symptoms had disappeared. The author calls attention to the rapid and marked benefit that was obtained from the use of the drug in addition to the absence of any disagreeable symptoms from it.

### The Type Used in Printing the Principal German Journals of Ophthalmology, Considered From the Standpoint of Ocular Hygiene.

COHN, Breslau. *(La Clinique Ophtalmologique,* February, 10, 1900.) Cohn says, that in but three out of the ten ophthalmological journals published in Germany is the type used of such a character as to conform to the needs of the eye. The author urges the necessity of more attention to this point in all printing, but considers that a special burden rests upon eye journals, as they should offer good example to others.

### The Site for the Cutaneous Incision into the Lacrymal Sac.

TERSON, Paris. *(La Clinique Ophthalmologique,* Feb. 10, 1900.) Terson places the point of incision at three and a half millimeters to the nasal side of the internal commissure. He states that it may be made either at level of the commissure if the palpebral cartilage is to be cut, or slightly below it if the cartilage is to be avoided.

### A Contribution to the Study of Tuberculosis of the Conjunctiva.

VIEUSSE. *(Recueil d'Ophtalmologie,* January, 1900.) Three cases of tuberculosis of the conjunctiva are reported by Vieusse, All occurred in young girls. Two of the patients suffered from lupus of the face. Two were successfully treated by complete removal of the diseased portions, followed by scraping and cauterization of the face. Iodoform was dusted over the exposed surface and the eye was closed with a bandage for a few days' time.

The surface that was cauterized several times, healed with a firm scar. In no case was there symblepharon or entropion. The author divides the types in which the disease may appear under three classes. In the first there is swelling of the conjunctiva which has a bluish red color in association with a deeply excavated ulcer with ragged edges. In the second form of the disease almost all of the surface of the palpebral conjunctiva is covered with slight excresences, the tips of which are frequently ulcerated. The third variety constitutes the polypous form. This is rare. The author is of the opinion that the disease frequently commences in the nose and spreads from thence to the conjunctiva. Consequently he believes that the nasal cavities should always be examined.

### A Case of Primary Ocular Glanders Treated by Cauterization with the Galvano-Cautery.

STREZMINSKI, Wilna. *(Recueil d'Ophtalmologie*, Jan., 1900.) As seen by Strezminski the disease took the form of a swelling about the size of a pea, situated on the middle of the lower lid. The conjunctiva of the eyeball, the lower lid, and the angles of the eye was red and swollen, as was also the skin of the lower eye-lid. As the patient was a veterinarian the disease the author believes was probably contracted during his practical work, although the patient was unable to trace it directly to any particular case. The condition was first noticed the day before the patient reported for treatment, and it was probably in measure due to this fact that removal with cauterization of the base of the swelling effected a cure. The microscope revealed the typical bacillis of glanders.

### On Iridectomy for the Relief of Chronic Simple Glaucoma. Several Results of Long Standing.

TRUC, Montpellier, and CAUVIN, Nice. *(Archives d'Ophtalmologie*, January, 1900.) Many of the continental physicians, these authors state, deny that iridectomy gives any relief in chronic simple glaucoma, but they, nevertheless, enter the discussion in favor of the procedure. Thirteen cases in which operations dated back from five to six or seven months are reported. In the main the results were encouraging, and lead the authors to the conclusion that iridectomy should be performed, in such cases at as early a date as possible. Sclerotomy, they believe, is of value as a preparatory measure in cases in which there is greatly increased tension and with patients who are extremely nervous or intractable.

They state that it may also be performed with advantage in painful absolute glaucoma. In all other cases they give preference to iridectomy.

### Symmetrical Marginal Dystrophy of Both Cornea, with Regular Consecutive Astigmatism, Cured by the Use of the Cautery.

TERRIER, Paris. (*Archives d'Ophtalmologie*, January, 1900.) Terrier's patient was a man of 45 years of age, who had previously served as a soldier in Africa. While in service some seventeen years previously he noticed that he was not able to sight his gun with the right eye. He was, however, unable to state whether this condition had appeared gradually or rapidly. About fifteen months before the author saw him the sight of the left eye began to fail. He was treated by various physicians who employed glasses and iodide of potassium, but without benefit. The patient's family history was markedly tuberculous, but his personal history was good.

The ocular condition, which was bilateral, was peculiar. In the upper part of each cornea, near the margin was a crescent of transparent corneal tissue, slightly swollen and surrounded by a narrow strip of whitish colored tissue of much the same appearance as an arcus senilis. All of this portion of the cornea was insensible, but its surface was intact, as demonstrated by the use of a solution of fluorescine. There were inflammatory symptoms. The media were clear and there were no abnormalities in the deeper portions of the eye. Keratoscopic and ophthalmoscopic examinations revealed a slight astigmastism of the left eye with a considerable astigmatism of the right eye. In the latter eye the vertical meridan was hypermetropic to the amount of three diopters, the horizontal meridian being myopic to the amount of eight diopters. Lenses produced no improvement in the visual acuity which equalled one-fiftieth of normal. The refractive error in the left eye was one diopter of myopia in the vertical direction with a diopter and a half of the same character of refractive change in the horizontal direction. Vision equalled six-tenths with the correction. The author decided to cauterize the diseased region of the cornea for the purpose of producing cicatricial contraction, beginning with the worse eye. Almost from the start benefit was obtained from this method, in the right eye, but none could be gained for the vision of the left. Eventually the refractive error of the right eye was reduced to a myopic astigmatism of one diopter in the vertical meridan with a vision of one-third. The refractive error of the left eye was also brought to the same condition, the acuity remaining at six-tenths of normal. The pathological condition, the author states, was probably tropho-neurotic in type.

### Astigmatism of the Rays Entering the Eye Obliquely, The Application of Skiascopy.

DRAULT. *(Archives d'Ophtalmologie,* January, 1900.) Drault bases his experiments upon the living subject and upon mathematical calculation. His conclusions are as follows:

1. The actual ocular astigmatism by oblique incidence is somewhat less than is indicated by calculation, which presupposes the corneal and crystalline surfaces to be spherical.

2. Measured from the visual line this astigmatism is slightly less for the temporal portion of the visual field than for the nasal portion. The explanation of this fact lies in the inclination of the optical axis upon the visual line.

3. The retina usually lies between the two focal points in a situation that is favorable for objects which are nearer than the point of fixation in the visual line.

4. In practising skiascopy this should be taken into account. The light should be thrown in a line passing directly upon that portion of the retina lying between the macula and the optic papilla, which may be done by the patient directing his gaze in a line that is somewhat less oblique than that which is used during the examination of the papilla.

### On Tumors of the Lacrymal Gland.

ROGMAN, Gand. *(Annales d'Oculistique,* February, 1900.) Rogman describes an endothelioma of the lacrymal gland which he removed. The growth was encapsulated and gave every appearance of a primary glandular tumor. The patient was a man, forty-two years of age who had noticed the mass about two or three years before consulting the author. The patient could not remember any injury to the eye or its appendages that could account for the presence of the neoplasm. Beyond the fact that the eye protruded forwards and inwards, and that the tumor could be felt underneath the skin at the site of the lacrymal gland there was an absence of all symptoms. The growth was removed *en masse*. Eight months later there was no sign of recurrence.

Examined under the microscope the tumor was found to very closely resemble the normal structure of the gland. The ducts were lined with a double row of epithelium, the inner row being generally composed of cuboidal cells and the outer one of cylindrical variety. In each instance, however, the inner row was filled with granular protoplasm. The so-called epidermic pearls were found and certain portions of the tissue contained hyaline matter, some of which was in the form of balls. The diagnosis made was that of primary endothelioma of the lacrymal gland.

### Some Grave Lacrymal Complications: Plegmon of the Orbit, Optic Atrophy, Panophthalmitis and Meningitis.

Truc, Montpellier. (*Annales d'Oculistique*, February, 1900.) Truc states that lacrymal complications may be divided as follows: 1. Cutaneous, erythema, eczema, impetigo. 2. Nasal; eczema, impetigo, osteitis, rhinitis, ozena. 3. Canalicular; periostitis, osteitis, dacryocystitis, fistula. 4. Palpebral; blepharitis, entropion, ectropion, chalazion, abscess. 5. Conjunctival; conjunctivitis, granulations, pterygium. 6. Keratitis; vesicules, pustules, ulcers. 7. Iritis; serous, plastic, purulent. 8. Irido-cyclo-chorioiditis; synechia, hernia, atrophy. 9. Orbital; tenonitis, cellulitis, phlegmon, abscess. 10. Intra-cranial; phlebitis, thrombo-phlebitis, meningitis. 11. Functional; halos, photopsia, amblyopia, muscae, asthenopia. 13. Operative; keratitis, iritis, and diffuse ocular and periocular suppuration.

He reports several personal cases with a summary of some that have been published by other authors. Of his own casés one was complicated with phlegmon of the orbit with consecutive optic atrophy: a second had similar conditions to which were added lagophthalmos and ulcer of the cornea. The third presented double panophthalmitis.

One eye was enucleated and on the other the operation for evisceration was practised, the latter patient being a diabetic.

### A Contribution to Our Knowledge of Malignant Tumors of the Orbit.

PERGENS. (*Annales d'Oculistique*, February, 1900.) In this article the clinical notes of five cases of malignant tumors of the orbit are given by Pergens. The ages of the patients were respectively fifteen, twenty-seven, twenty-eight, fifty and, sixty-seven years. Two of the growths were diagnosed as fibro-sarcomata, one as malignant fibroma, another as an angio-sarcoma and another as an epithelioma. One patient only was a female. Of the five, two died from a recurrence of the disease within a year's time from the date of operation, and another died from a similar cause within two years from the operation. At the timeof writing the article, the author considered the condition of the other two patients to be hopeless, as they were suffering from recurrence.

### The Corneal Lesions of Subacute Conjunctivitis.

PETIT, Rouen. (*Annales d'Oculistique*, February 1900.) In a series of studies made upon this subject Petit arrives at the following conclusions: 1. Diplobacillar infection, although usually confined to the conjunctiva, may reach the cornea and give rise to ulcerative processes, which however are not as a rule of grave nature; 2. The diplobacillar ulcer is situated most frequently in the peripheral third of the cornea. It is superficial and does not exhibit a marked tendency to extension in depth. though if neglecetd it may extend superficially; 3. The lesion is the direct result of infection by the diplobacillus, which may be found in pure culture in the secretion from the ulcer; 4. Sulphate of zinc in solution of the strength of one to forty has always given the author rapid and useful results.

### Ethmoido-Frontal Sinusitis Consecutive to an Orbital Cellulitis Provoked by a Dacryocystitis.

ANTONELLI, Paris. (*La Clinique Ophtalmologique*, March, 10, 1900. Several months before the patient, who was a woman of twenty-five years of age, came under Antonelli's care she was treated by another physician for an ocular affection for which the superior canaliculus had been incised throughout its entire length. The patient complained to the author of lacrymation and a "lacrymal tumor." This "tumor" was situated at the inner angle of the eye, and was divided into two segments by the internal palpebral ligament. The large portion was above and the smaller below the ligament. The growth was but slightly prominent and was not reducible. On palpation there was a sensation resembling that which is produced by fluctuation. By introducing the little finger beneath the eyelid the mass could be felt extending backwards into the orbit. The swelling was mobile. Pressure on it did not produce any egress of pus from either the lacrymal puncta or the nasal cavity. It was impossible to pass a sound by way of the superior canaliculus, nor were attempts to force injections through by way of the inferior canaliculus any more successful. "Stricturotomy" from below was practiced and by this means the author succeeded in passing a sound. Several bony thickenings could be felt.

The author believing that the trouble might possibly arise from the nose consulted a rhinologist. The report was negative. He then made a diagnosis of localized abcess of the orbit, probably chronic, and caused by a dacryocystitis. Having chloroformed the patient, he opened the abscess freely. Between six and seven cubic centimeters of pus escaped. The cavity was found to be funnel shaped and extended back into the orbit almost as far as the optic foramen. The ethmoid bone was denuded in places. Despite the most rigorous treatment the abscess refused to close, and two months later the patient was again referred to a rhinologist for a reexamination of the nasal cavities and the acessory sinuses. The report was again negative. About this time a slight attempt at granulation was noticed, but a month later the symptoms became suddenly aggravated. The integument was red and the parts were extremely sensitive to pressure. The patient complained of a dull pain in the frontal region. An operation upon the frontal and the ethmoidal sinuses was performed, and at the end of two months the patient left the hospital cured.

### The Oily Collyria Once More.

SCRINI, Paris. (*Archives d'Ophtalmologie*, February, 1900.) In reply to an attack made upon the value of the oily collyria by Valude, Scrini writes in their defense. He repeats the assertions already made for them, and reports two cases of glaucoma in which their effect was most happy. In the first instance the aqueous solution of eserin was unsuccessfully employed, whereas the disease yielded readily to the use of oily collyria of the same drug, In the second case the oily collyria were employed from the commencement so that no direct comparison can be made. In neither instance was there any irritation from the employment of the material.

### Ocular Hydrostatics.

NICATI. (*Archives d'Ophtalmologie*, February, 1900.) An instrument which has been designed by Nicati is termed a sclerometer. The contrivance is allowed to rest upon an eyeball and by the amount that a plunger depresses the globe the resistance is measured. The sinking of the plunger moves a hand which revolves arounda quadrant on which there is a register. On this scale there are two sets of numbers running from 0 to 100, one from left to right and the other in the opposite direction. In reading the result the author employs one set of numbers as the numerator and the other as the denominator of a fraction. If the hand rests at the zero side of the rows, the reading is recorded as 0/100. If it rests on the maximum side it is recorded as 100/0, or infinity; if at the middle 50/50. The scale is so graded that a weight of one gramme will move the plunger one one-hundreth of a millimeter.

Nicati finds that intraocular pressure or "hydrotonus" is not affected by instillations of cocain, atropin, eserin, or conjunctival irritants. Experiments with the manometer in other hands do not agree with this in regard to corneal and conjunctival irritants, but this discrepancy he explains by the fact that the squeezing together of the lids is the responsible causative agent, Tension in the anterior and vitreous chambers was found to be equal.

The author's results do not confirm the statement made by others that intraocular tension remains constant up to the age of twenty-five years and then gradually increases.

On the contrary he finds that it reaches the average as early as a few days after birth and then slightly fluctuates. He states that hydrotonus is proportional to the blood pressure. He believes that it is also proportional to the relation existing between the weight of the animal and its skin surface, as well as to the degree of atmospheric pressure.

He asserts that this equilibrium of tension is maintained by the constriction of the chorioidal muscular fibres of Müller, these fibres being under the control of the ganglionic cells of the chorioid that have been described by the same author. He explains the constant volume of the intraocular vessels on the theory that the contraction of this muscle compensates for the cardiac impulse.

He suggests that on account of the relation existing between blood-pressure and ocular tension a field of clinical, diagnostic, and therapeutic research should be made beyond the eye alone. On account of the lowering of tension after death, which appears in a time varying from a few hours to four days, the instrument he believes may prove useful as one of the means of establishing positive signs of death. The stages in this post-mortem fall of intraocular pressure are interesting: The first sign is a rapid lowering of tension such as occurs in shock. This is followed by the so-called "first oscillations" during which period the tension rises above normal. This he thinks is probably a reflex spasm due to the excitation of the ganglion. After these phenomena appear the "secondary oscillations," the tension now being normal; these oscillations seeming to be purely muscular in character. They are followed by the final fall which is characterized by the absence of oscillatory tonus.

The author enters into a discussion of the various forms of glaucoma, showing a distinct connection between this condition and the theory of the chorioidal muscle and ganglion. It is interesting to note, in connection with the surgical measures being practised upon the cervical sympathetic for the relief of glaucoma, the assertion he makes that removal of these ganglia is followed eventually by a great lowering of the ocular tension with damage to the organ.

# ABSTRACTS FROM RECENT SPANISH AND PORTUGUESE OPHTHALMIC LITERATURE.

BY ALBERT B. HALE, M. D.

CHICAGO, ILL.

### Blood Staining of Cornea.

WERNICKE, Beunos Aires, (*Anales de Oftalmologia*, July, 1899.) After reviewing the literature of important cases where blood stains appear in the cornea, adds to to them the following: A young boy eight years old, while playing with his brother received a blow in the right eye. There was at first much pain and swelling, but very little blood escaped from the lids. The pain continued two or three days so severely as to prostrate him. This finally ceased, but when the boy opened his right eye the mother noticed that it appeared quite black and the vision was lost. They did nothing but apply cold compresses, without consulting a doctor. This black color of the sclera disappeared after two or three weeks, but vision did not return as had been expected. As the right eye began to squint, the parents finally resolved to consult an eye doctor. When he saw the lad, the right eye was turned decidedly inward. There was a mild peri-corneal injection. The cornea preserved its transparency only at the periphery, while its center was occupied by a round stain of a chocolate color, darkest outward but clearer toward the center, although none of the subjacent structure could be seen the edge of the stain is well marked. The edge of the stain was uneven and had certain darker concentric lines, none of which forming a complete circle. The surface of the cornea was smooth and normally brilliant. In looking through the edge of the cornea the anterior chamber was seen to be deep and the iris of a greenish color and atrophic; tension was reduced and vision lost. I told the parents that the cornea would probably recover its transparency but that the vision was lost, and I asked them to let me see the child once a month, which they did not do.

Very likely such a blow to the eye was not enough to rupture all of its coats, but did produce a rupture of the membrane of Decemet and a leakage of blood into the anterior chamber. This hyphema might have been produced immediately, or some days afterward, and would generally be accompanied by a bloody and intense suffusion of the conjunctiva and lids.

In one case reported the cornea had a reddish tint on the third day; later this color changed to chocolate and then to green; reabsorption began in the periphery and continued rather rapidly.

The prognosis depends rather upon the internal lesions, than the corneal lesions themselves. Treacher Collins says that the discoloration of the cornea is produced by an accumulation of granules of hematoidin in the corneal spaces that the hemoglobin passes by diffusion through the membrane of Descemet and is precipitated within the cornea because it is insoluble in the corneal fluids. W's. view is that there is always a rupture of Descemet's membrane which permits the blood to penetrate within the cornea itself, that he has seldom seen a hyphema of any duration which did not stain the cornea in some degree. It seems to him more sensible and probable to assume the rupture of Descemet's membrane than any other hypothesis.

The rarity of the affection is undoubtedly due to the unique circumstances necessary to produce it. It demands a blow strong enough to rupture Descemet's membrane, but not strong enough to rupture the other coats.

### The Therapeutic Value of Instillation of Quinin in Suppuration of the Anterior Segment of the Eye.

**Gonzalez, Leon**, Mexico. has of late employed this drug with success in suppurative cases of the cornea. In pus invasion of the anterior chamber and in cases of iritis with hypopyon, he uses exclusively a 1% solution of neutral hydrchorate of quinine. These cases were such as did not yield to ordinary treatment, thus obliging him to seek something different and it seemed to him very rational after considering the efficacy of quinin to try its effect (two cases are given in detail); when using a solution the patient feels a sharp burning at first, which rapidly disappears at the end of five minutes. The eye waters during this burning. It is well known that quinine affects the eye muscle, which in itself encourages the re-absorption of the exudate and in such cases where many teachers would use a myotic quinin seems particularly valuable. The day after the use of quinin the infiltrated zone is less distinct and the abcess is smaller, the pus appears to begin to be absorbed and the cornea clears until the ulceration has disappeared.

Another therapeutic value of quinin lies in the sedative effect which it has in general on corneal inflammations. The author has been convinced of this fact many times, although the pain is increased at first it rapidly subsides and is very soothing afterward. The antiseptic action of the quinin is not its only effect upon cornea—it also prevents leucocytosis as it inhibits the leucocytes in a solution of 1:4000.

### Eye Operations in the Toluca Hospitals.

ROCHA, (*Anales de Oft.*, January 1900) tabulates the operations in the Eye Department of the General Hospital of Toluca. The total number of operations was 232. There were 50 cataracts, 27 of which were senile, 3 traumatic, 1 congenital, 1 luxated. The secondary operation was done only once—in only one case was there infection, this in a man suffering from delirium tremens. Panophthalmitis developed. He did the simple operation without iridectomy in all cases but one. There were two prolapses of the iris in the 49 operations. Vision varied between one-sixth and the normal after correction with lenses.

There were 17 cases of acute glaucoma and 9 of chronic. They were all treated by sclerotomy, 9 of which were cures and 4 improved in first group and two improved in the second group. Sclerotomy was done several times whenever the symptoms of glaucoma were increased and relief was obtained at once—rarely did the operator resort to iridectomy in preference to sclerotomy.

### Double Hysterical Amaurosis.

SALTERIAN, Montevideo (reported in the *Anales Oph.*

for July, August, September, 1899.) Dr Salterain emphasizes the rarity of this affection, referring to many French authors on the subject, quotes ten cases and adds a third from his own practice, This was a girl 22 years old with six healthy brothers. She, herself, was rather delicate and thin and anemic. The mother suffered from "Nervous attacks" and died of phthisis. The father died of cerebral hemorrhage. The patient's trouble began six years ago, when she had convulsions and loss of consciousness. This was repeated from time to time and increased in intensity and duration, depending somewhat on the genera health. The last attack, shortly after which she was brought to the author, had left her completely blind 20 days ago. Menstruation had always been above the normal. When asked this question about herself, she had a fit which lasted about half an hour. The body became rigid and face pallid—the eyes moved violently and finally became fixed in the upper position, so that the lower border of the cornea was scarcely visible. The author finding her in this critical condition, but convinced of the propriety of his diagnosis, made firm pressure over the region of the right ovary, nothwithstanding the remonstrances of the people with her. He persisted in such treatment and the attack began to subside. The color came back and the patient gave a sigh of relief and exclaimed—"Doctor I see perfectly. Will you please give me a glass of water." On examining the patient with the ophthalmoscope immediately after her recovery the eyes appeared absolutely normal, the reflexes to light and accommodation were also normal—the color sense was normal. The vision was good but the examination was not completed, owing to the extreme fatigue of the patient. Two days afterward when examined with the perimeter, the field was rather limited but regular to colors. She returned home and wrote from time to time that she had had no other attack while continuing the simple treatment of cold baths, proper food and some iron medicine.

Another case was reported of a woman who complained of absolute blindness having suddenly occurred a few hours since. She said that she saw absolutely nothing. The eye showed no abnormality except dilated pupils and complete absence of the pupillary reflexes. The patient who was under observation for a whole day had used no medicine and had previously been able to see. The lens showed a few specks of opacity—the fundus was normal and no affection of the optic nerve or retina could be found. The eye movements were normal and the patient had never complained of diplopia.

The author classifies cases of blindness without visible ocular lesion in two groups. First, amaurosis with persistence of the light reflex of the pupil. Second, amaurosis, with absence of this reflex. The first group embraces two diseases, hysterical amaurosis and double hemianopsia, due to some lesions within the brain, or there may be blindness due to thrombosis or embolism unaccompanied by hemplegia.

In the case last given, the light reflex was lost. We therefore admit a cerebral lesion and we eliminate hysteria from the cause.

The author thinks that from our knowledge of the subject we can admit the localization of some material lesion capable of producing double amaurosis with the absence of the pupillary reflex, only some alteration of the optic tract lying between the globe and the basal ganglia, in the particular case mentioned with the sudden onset of the symptoms. In a person of that age (77) there might be a cerebral hemianopsia. To admit the double hemianopsia or a double embolism is to admit such a great rarity as practically to exclude it from consideration. This patient was cured either spontaneously or by suggestion, for she received a few treatments by electricity and a few grains of bromide of potassium and pills of zinc, and our most emphatic statement that she would be cured so that on the third day she saw just as well as before the attack. She was seen four months after the blindness and then the visual fields were normal for white and colors, although the retinal function was very soon exhausted so that a few moments after the examination had begun the field for colors was very much reduced. Vision was below normal, but only such as might be expected from the opacities in the lens. The pupils were now normal and re-acted to light.

In the discussion which followed Dr. Isola mentioned another case in a woman 24 years of age, who had been nervous since childhood. One day when crossing the street she suddenly, without apparent cause, became blind. She was seen four hours afterward. There was an intense spasm of the orbicularis. On putting a few drops of water in the eyes and being told she could open them, she did so but saw nothing. The pupils were completely dilated but the fundus was normal. Believing that the attack was hysterical, he treated her for it on the spot and told her she could see. Vision did increase and at his third demand it returned completely and has remained good ever since.

### Amblyopia Nicotinica.

LOPEZ, of Havana, Cuba. Reports in *(Anales de Optalmologia.* for February, 1900.) a case of tobacco amblyopia, of interest because of its rarity, and that too, in a tobacco raising and consuming country. He at one time even doubted the existence of the pure tobacco form, but is now convinced by his own experience.

The patient, 40 years old of good physcique, smoked two packages of cigarettes (probably 40 to 50) a day, and drank coffee, but no alcohol except a glass of wine at each meal. He at first complained of headaches, but thereafter his vision grew worse. There were some signs of atrophy. After abstinence from both coffee and tobacco, vision returned to normal in the right eye and to $^2/_3$ in the left· The reporter does not think the coffee is any to blame.

# ABSTRACTS FROM RECENT RUSSIAN AND SCANDINAVIAN OPHTHALMIC LITERATURE.

BY A. BARKAN, M. D.,

SAN FRANCISCO, CAL.

AND

PROF DR. A. KRUKOW,

MOSCOW, RUSSIA.

### A Case Krönlein's Operation for Neoplasm of the Optic Nerve.

GOLOVIN. (*Messenger of Ophthalmology*, July-October, 1899.) The patient was a 4-year-old boy. The tumor of the optic nerve was, as the microscopic examination proved, a fibro-sarcoma myxomatodes tunicae arachnoideae nervi optici. Its size was 5 cent. in length and 2.5 in breadth. Osteo-plastic resection of the outer orbital wall was made according to Kronlein's method and tumor removed—no signs of recurrence during subsequent six months, Considering the satisfactory results, easy technique and the insight it gives into the deeper parts of the orbit, Krönlein's method should be universally followed.

### Operative Treatment of Pulsating Exophthalmos.

GOLOVIN. (*Surgery Mzg.*, No. 34.) After giving a short account of the anatomy of different clinical forms of pulsating exophthalmos and its treatment, the author communicates the following two cases which he operated upon in the ophthalmological clinic of the University of Moscow. I. Aneurysma arteriovenosum spontaneum orbitae extrinsica. The 19-year-old patient had several tumors on eyelids and adjacent parts of the face. These tumors, of the size of a walnut, were of a bluish color, pulsating and easily compressed—being composed of aneurysmatically distended veins. A cut through the skin and the underlying tissues having been made below the eyebrow along the upper rim of the right orbit, several knots and a rather long piece of the vena ophthalmica sup. were separated and cut out. The vein had reached the size of a little finger. Six weeks later a similar operation was made on the left side. This time, however, the knots were not removed, but ligature of the vena ophthalmica sup. made as far back in the orbit as it was possible to reach and one part of the vein (4 cent. long with a diameter of 1 cm.) cut out between two ligatures. Result, good on both sides. The veins are yet distended, but the veiny knots that had not been removed have disappeared. Pulsation is not to be detected. II. The subject was a woman of 31 who had been wounded in her left temple by a revolver. Examination with the Roentgen rays showed that the bullet was lodged in the upper part. Severe exophthalmos, (nearly 2 cent.) of the right eye was the result. The finger felt quite easily the pulsations of the eyeball, and a murmur was audible to the stethescope. At the same time anesthesia appeared in the region supplied by the whole tregeminus with lesion of its moter branches. Slight keratitis, neuro-paralyticus. V=O. Osteoplastic resection of the outer orbital wall according to Krönlein's method having been made, the distended and pulsating ven. ophthalmica sup. was exposed. Ligation of the part nearest to the eyeball was made whilst in the apex of the orbit the vein was pressed with two Peans' pinchers. The latter were not removed until the next day. Result satisfactory. Exophthalmos disappeared, no more pulsation, no bruit. The author says in conclusion that ligation of the common carotid in pulsating exophthalmos is indispensable in cases where serious intra-cranial symptoms are noticed. On the contrary, in cases where the symptoms are located in the orbit, the *orbital operation* with temporary resection of the outer orbital wall according to Kronlein's method proves more appropriate.

### Transplantation of Mucous Membrane From the Lip in Cases of Incurved Eyelids.

CORCASHVILI. (*Messenger of Ophthalmology*, July—Oct., 1899.) During the last 18 months the author transplanted mucous membrane of the lip in 112 cases of incurved eyelids (104 of the upper and 8 of the lower lid). The result was a good one in all the cases. Complete mortification of the transplanted strip in one case and partial mortification in 2 others (caused by the authors own fault) were the only exceptions. An incision is made in the intermarginal space and a strip of mucous membrane brought into the gap and secured by several stitches. The strips will also adhere without sutures, but in this case both eyes must be bandaged and the patient kept in bed.

### A Contribution to the Subject of Tumors of the Eye.

LOBANOFF, *(Messenger of Ophthalmology*, July—Oct., 1899.) I. *A rare case of sarcoma of the orbit.* The patient 24 years old. The tumor, as large as a hazelnut, situated just above the margin of the floor of the orbit and firmly adherent to it. Microscopic examination showed it to be a cylindroma which had partly undergone amyloid degeneration, partly calcination and ossification. II. *Dermoid of the conjunctiva.* Patient 19 years old. Tumor of the size of a hazelnut located in the conjunctiva in the outer part of the left upper lid (seat of the lacrimal gland). On mycroscopic examination it proved to be a typical dermoid. A smaller tumor like the one described was found in a similar position in the other eye. III. *Lymphoma conjunctivae.* Patient 38 years old. One tumor situated on the palpebral conjunctiva of the right lid, near the outer canthus, another occupying all the inner half of the fornix conjunctivae. On microscopic examination both tumors proved to be Lymphoma parvicellulare (Lymphoma molle).

### On the Influence of Non-pathogenic Bacteria in Infectious Pathology of the Eye.

LOBANOFF. *(Messenger of Ophthalmology*, March-April, 1899.) Taking into consideration that different species of non-pathogenic bacteria are always to be found in the conjunctival sac, the author made a series of experimental investigations in order to answer the following question: Do the different non-pathogenic micro-organisms call forth any change if introduced into the sound eye? He introduced into the anterior chamber or sometimes into the vitreous of the rabbits 0.1-0.2 cm. bouillon cultures of the following micro-organisms: bacillus candicans, C. violatens, C. ruber, sarcina lutea, C. subtilis, C. proteus vulgaris, C. prodigiosus, micrococci, agilis (AliCohen), C. fluorescens putridis Flügge, microcci-roseus and C. mesentericus ruber. Clinical observations and microscopic preparations showed that inoculation of some species of micro-organisms into the anterior chamber of rabbits either remains without influence or caused pathologic changes in the eyes. Bacllius candidans, violatens and ruber are not pathologic for the eye. Their culture is not to be found in the anterior chamber after 24 hours. Sarcina lutea, C. sublitis and C. Proteus vulgaris cause iritis plastica. B. prodigiosus, micrococci angils, C. fluorescens putides and micrococci roseus cause iritis plastica and iridocyclitis plastica. Bacteria which remained without effect when brought into the anterior chamber also failed to produce pathologic processes when brought into the vitreous. The changes produced by these micro-organisms in the eye do not depend on the mechanical irritation of the culture, but on the biologic qualities of micro-organisms.

### Changes in the Corneal Astigmatism Caused by Operations on the Recti Muscles.

AVERBACH, M. (*Med. Review*, 1899, May.) The author measured, with the ophthalmometer of Javal and Schiötz, the degree of astigmatism and the direction of its chief meridians before operation for squint was made and again a few days after it. In several cases subsequent examinations were made in after months. Operation for squint does not remain without influence on astigmatism but it is difficult to come to any final conclusion, the number of cases being too small. In 10 cases of tenotomy of the internal recti; the difference of refraction between the two principal meridians increased, i. e., the degree of astigmatism became higher. This increase of astigmatism wavered between 0.1-1.2 D. The refractive power of the vertical meridian generally increased; that of the horizontal increased in 4 cases and diminished in 6. The angle of the principal meridians to each other underwent changes from 6°.18°. In tenotomy of the external recti (5 cases) astigmatism diminished in one case, increased in he other four. In two of them the increase could be detected even half a year later. The angle between the 2 chief meridians changed from 6° to 9°. One case of tenotomia m. recti interni and advancement m. recti externi and one of tenotomia m. rect. int. and advancement m. recti int. were followed by decrease of the refractive power of the cornea in its chief meridians. In the first of these cases the amount of astigmatism remained unaltered, while in the latter it changed to 1.1°. The angles at which the chief meridians were to each other showed a change of 15° resp., 10°.

### Cataract in Connection with Tetanus.

LOGETCHNIKOFF, L. (*Medical Review*, 1899, Oct.) Patient 22 years old. In her 16th year she had the first fit of tetanus: painful cramps of the fingers, contraction of the elbows, painful tension of the legs, slight difficulty in breathing; consciousness remained clear. Similar fits occurred in her 17th and 18th years; during her 19th and 20th years she had none, but in her 21st (1897) year she had a very severe fit, after which she lost her hair, and her finger nails dropped off. In the spring of 1898 her sight began to fail, caused by a general soft cataract forming on both eyes. During 1898 she had 3 fits of cramps. Fundus of the eye normal. Neither albumen nor sugar in urine, symptoms of Chrostek and Trousseau strongly exemplified. From 1865 to 1871 the author observed 15 cases of cataract developing in connection with tetanus (described in the Messenger of Medicine, 1872, No. 35, and a short account given in Klinisch. Monatsblatter, 1872, Nov., Dec.); at that time, however, the cramps were not called tetanus, this illness having been too little studied. 35 similar cases are to be found in literature during 34 years. The author does not think that cataract is the result of cramps, but that cramps, disturbance in nutrition and cataract have all some general cause, most likely of an infectious character.

### Therapeutic Importance of Sperminum (Sperminum Roehl) in the Treatment of Diseases of the Eye.

JACOVLEFF, (*Physician*, No. 10, 1899.) Observations were taken in 58 cases in the clinic of Prof. Belliarminoff. Sperminum was injected daily under the skin, a whole ampulla (1 cm.) at a time. Subconjunctival injections of

2-4 parts of a Pravatz's syringe had been made several times, but were soon given up. The author used sperminum by atrophia n. n. opticorum, chorio-retinitis ac. et. chr., opacitates corporis vitrei, keratitis purulenta et. parenchymatosa, retinitis pigmentosa, choroiditis serosa chroiditis disseminata neuritis et, neuro-retinitis, ablatis retinae, amblyopia alcoholia, paralysis n. oculomotorii et. amblyopia hysterica. From his observations, the author recommends sperminum in the following cases: optic nerve atrophy, opacities in the vitreous, if the process that caused them is already at an end. Amblyopia alcoholica. Of the 22 cases of optic nerve atrophy (whatever the reason of the atrophy might be) nearly all those which had not been completely sightless, showed an improvement from the use of sperminum. The degree of improvement was not always the same, for instance from $^{7}/_{200}$ to $^{20}/_{200}$; from $^{20}/_{70}$ to $^{20}/_{40}$; from $^{20}/_{40}$ to $^{20}/_{20}$; from $^{1}/_{1000}$ to $\frac{4-5}{1000}$; Extension of visual field in most cases. The improvement was sometimes very insignificant, generally less the older the process and the greater the loss of sight.

### A Case of Hysterical Ophthalmoplegia Externa.

E. GEOFFRIO and GUISE. (*Messenger of Ophthalmology*, Nov., Dec., 1899.) The patient is 19 years old. After a family quarrel and a fright the patients sight began to fail; at the same time his arms, legs and tongue were noticed to be paretic. V. = 1.0 Emmetropia. Field of vision limited to fixation point. Fundus normal. Pupils, of moderate size, respond to the stimulus of light and convergence. Voluntary movements of the eyes completely lost, involuntary movements happen now and again. A careful examination of the nervous system (Dr. Guisé) lead to the conclusion that this was a case of hysteria.

### Suture of Cornea According to Kalt's Method.

ANDOGSKY. (*Messenger of Ophthalmology*, May—June, 1899.) Of the different methods of corneal suture done chiefly for extraction of cataract the author prefers the one of *H. W. Williams-Kalt*, Andogsky differs slightly from Kalt inasmuch as he makes both stitches —the one under the limbus cornea and the one over it—in horizontal direction. The thread passes through the thick of the tissue (corneo-scleral) without penetrating into the anterior chamber. Extraction of cataract is then done in the usual way after which the thread is tied. The stitch is removed on the 6th—10th day,—Indications for operation are as follows: 1. In cases of extraction of cataract where escape of vitreous is possible. 2. In cases of plain extraction where it is particularly desirable to keep a round pupil (two stitches should be made in such cases). 3. In all cases where on account of pathological changes of the cornea, the wound might be expected to gape or heal too slowly, 4. In cases where large prolapsus iridis of long standing has to be removed. 5 In operations for keratoconus and keratoglobus. The author himself used the corneal suture sucessfully in 6 cases (operation for cataract and staphyloma).

**On the Influence of the Scleral Scar in Operation for Glaucoma.**

SELENSKY, DR. (*Thesis*, St. Petersburg, 1899.) The author undertook to study experimentally the power of filtration of sclero-corneal scars. For that purpose he made on the eyes of rabbits, Wecker's double sclerotomy and iridectomy. Several days after the operation (from 8-145) he injected during half an hour, a 1-5 per cent. solution of ferrum citricum into the anterior chamber, producing a pressure which was scarcely higher than the normal one. Upon this the rabbit was killed, its eyes enucleated and hardened—in formalin or spirit and examination, of the microscopic preparations, for iron made with kalium ferrocyanatum. Several experiments were made with injection of china ink into the anterior chamber. Filtration of the fluid through the sclero-corneal region can be proved on microscopic preparations by the presence of grains of Berlin blue or China ink in the direction the fluid takes. Results of experiments were as follows: The region of the cut acquires for a time a greater power of filtration than the other parts. This is proved by grains of Berlin blue and China ink being found in the elements of the scar and in the adjoining subconjunctival tissue (formation of artificial outlets) as well as in the peri-vascular spaces of newly formed blood-vessels which divide into numerous twigs in the region of the scar (extension of normal issues). Scleral scars in the eyes of rabbits keep their power of filtration in favorable circumstances during 2—3, maximum 4—5 weeks. Older scars lose this faculty because their tissue grows more compact and the newly formed blood-vessels disappear.

### A Histological Study of the Nervous System of the Choroid.

M. SEIDENMANN, (*Thesis*, St. Petersburg, 1899.) In his investigations, made in Prof. Lavdovsky's laboratory the author used Methylen-blue for the staining of rabbits' and rats' eyes. The results were as follows: (1) Nerve-fibres of the choroid accompanying each vessel—both arteries and veins—in the number of 2, seldom 3 together and are continuous with the nerves of the ciliary body. (2) The branches of those fibres build (a) a plexus in the adventitia of vessels (b) another more delicate plexus in the muscular tonic (T, media) immediately on its non-straited muscular cells (c) a fine meshwork in the chorio-capillaris and intravascular spaces. (3) In the ciliary body and iris can be distinguished plexus of medullated, and non-medullated nerve-fibres and end-plexus of primitive fibres in the form of final nets and numberless solitary fine axis cylenders for the ciliary muscles and those of the iris. (4) Ganglion cells in the tractus uvealis are most likely not to be found. But the epithelium cells and the star-like elements of the stroma can be taken for non-ganglionic nerve cells. (5) Non-medullated nerve-fibres intertwining with each other form knots in which nuclei and some protoplasm are found; these may be mistaken for ganglion cells. (6) Free nerve endings do not exist either in the choroid or in the other parts of the tractus uvealis. Sensory nerves of the choroid are not histologically proven. (7) In the choroid proper, *i. e.*, in all intravascular spaces the nerves form seperate plexuses or nets.

### On the Influence of Vibratory Massage in Ophthalmic Therapy.

EPINATIEFF, (*Thesis*, St. Petersburg, 1899.) as well as SNEGIREW worked with the vibrator of MAKLAKOFF. He also found that massage increases diffusion into the anterior chamber, hastens absorption of pathologic products out of it, lowers the intraocular tension, aids in the removal of opacities of the cornea (useless however in old leucoma) acts well in parenchymatous inflammation and pannus when all signs of inflammation are absent; whether massage is of any good in episcleritis is doubtful, but it is useful for neuralgia of the supra—and infraorbital nerve and paralysis of the ocular muscles; it also helps the absorption of inflammatory infiltration of conjunctiva, skin and tarsus of the lids.

### A Case of Aniridia Congenita Completa Bilateralis.

S. LOBANOFF. (*Physician* 1899. No. 27.) Patient 13 years old. O.D.—M 2,0 D, V = 0,1; O.S.—M. 2,0 D, V=0,2. Examination by oblique light and ophthalmoscopic mirror failed to show any remains of the iris. The ciliary processes were not to be seen either. In both eyes were found cataracta polaris posterior and in the region of the macula lutea greyish white spots, surrounded by black pigment. Nystagmus.

### Head-aches with Slight Degrees of Anisometropia.

R. KATZ (*Physician* 1899. No. 28) reports several cases as a proof that even slight differences of refraction in both eyes (0.25 — 0.5.D) can sometimes be the cause of asthenopia and head-aches.

### Influence of Different Temperatures of Liquid on its Absorption out of the Conjunctival Sac into the Inner Parts of the Eye.

S. LOBANOFF. (*Physician* 1899. No. 35.) In order to study this question the author made a series of experiments on rabbits. A rabbit was tied fast to Czermak's stand, its eyelids drawn apart by ligatures. In this way keeping the eyes wide open, during 20 minutes a saturated solution of fluorescin was dropped into both eyes with the difference that the solution used for one eye was of the temperature of rooms (16°—19° C) whilst the one used for the other was either of 25°—50° C or of 10°—1° C. After this the aqueous humour was taken from each eye by the help of a Pravatz' syringe and the degree of its colouring defined by the colorimetrical method of Prof. Belliarminoff. As should have been expected on account of the physical laws of diffusion it was proved that absorption is increased at a +° of 25°—50° C (the higher the temperature, the stronger the absorption) and is decreased at a +° of 10°—1° C. T. of 50° C produces a visible change in the corneal epithelium which becomes abraded, whilst at +° under 50° C no changes can be detected with the microscope.

### Diseases of the Eye From Febris Recurrens.

CHEMOLOSSOFF, (*Medical Supplement to the Naval Selection*, Feb. 1899.) During the epidemic of febris recurrens in 1895-96, 115 cases of diseases of the eye in connection with that disease were registered in the St. Petersburg ophthalmic hospital. 71 of these cases had been observed by the author himself. Choroiditis was found in 19 cases. It presented the picture of diffuse dust-like opacities of the vitreous which in a few days turned into flocculi. 96 cases of irido-choroiditis. In 13 both eyes had been affected, in all the rest only one had suffered. The disease mostly developed 2-3 weeks after the last attack, but in 4 cases it broke out between the attacks. The illness lasted from 1 to several months, generally ending in recovery.

### Pathologic-Anatomical Changes of the Eye in Congenital Syphilis of Sucklings.

LOKTEFF. (*Thesis*, St. Petersburg, 1899.) The author examined the eyes of 12 bodies of syphilitic children that had died at the age of 7 days to 10 months. Ten of them clearly showed signs of syphilis in the internal organs. The iris was pathologically changed in all the 12 cases, the choroid in 8, the ciliary body in 3, the retina in 2. The cornea was not once affected. The changes were in general the same as in the internal organs; endo- and perivasculitis, sometimes hyaline degeneration of the blood-vessels as well as round-cell infiltration of the proper tissue of the coats of the eye.

### A Case of Paresis Musc. Obliqui Sup. Caused by Grip.

VERESHIAGUIN. (*Military Medical Journal*, Oct. 1899.) The 27 year old patient, well nourished and of good constitution, had suffered neither from syphilis nor rheumatism. In 1898 he had influenza; at the same time diplopia was noticed, which disappeared a week after the influenza had worn off. In February 1899 the patient had another attack of influenza in connection with diplopia. On examination paresis musc. obliqui sup. sinistri was found which, according to the author, must be caused by nuclear disease.

# ABSTRACTS FROM RECENT AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

J. GUTTMANN, M. D.,

NEW YORK.

Quarter Ending March 1, 1900.

### Operation for High Degree of Myopia by Extracting the Lens.

GOLDZIEHER, PROF. WILHELM. (*Ungarische Medizinische Presse*, Jan. 31, 1900·) He recommends a new mode for operating for high degree of myopia. This operation consists in a combination of discission and extraction. First he makes an extensive but shallow discission in the upper layers of the capsule of the lens. By this only the outer portion of the lens swells and thus forms a cataracta corticalis. Three days later the extraction can be made. Goldzieher then presents a man who suffered from a high degree of myopia (11 dioptries) and now after the operation the patient can read with proper correction the smallest type. The pupil is black, it reacts well. Unfortunately astigmatism developed after the operation (keratectasia cicatrice.)

### Extirpation of the Ganglion Casseri for Neuralgia of the Trigeminus.

v. GROSS, EMIL. (*Pester Medizin-Chirurgische Presse*, Jan. 14, 1900.) The operation was made by Prof. J. Dollinger. Dr. Gross reports about the changes on the eye, which developed after the operation. The right eye showed after the operation myosis, ptosis and exophthalmos. These symptoms were never mentioned by others to develop after the resection of Gasserian ganglion, but Andreas Hogyes predicted from his experiments the possibility that these symptoms may develop. The simultaneous development of myosis, ptosis and exophthalmos corresponds with the picture of paralysis of the cervical sympathetic nerve, as it is known by experiments on animals and by resection of the sympathicus by man (glaucoma, epilepsy, Basedow). In many cases such resection did not leave any marks on the eye (Jonuesco, Donath, Hulti) although some authors succeeded in producing dilatation of the lid fissure, exophthalmos, mydriasis by irritating the sympathetic nerve which was laid bare, or in producing ptosis, exophthalmos and myosis, by severing the same. (Zimmermann). Undoubtedly we have to deal in this case also with symptoms of paralysis of the sympathetic nerve. It is now questionable (1) in which way the sympathetic nerve produces these symptoms, (2) In which way this nerve becomes injured by resection of the ganglion Gasseri? There is no doubt that the myosis is caused by the paralysis of the musculus dilatator pupillae and the ptosis by that of the musculus palpebralis (Muller). The opinions differ as to the cause of the exophthalmos. The patient now presented strengthens the view of Schapringer, of New York, who explains this symptom caused by the paralysis of the musculus orbitalis. This unstriated muscle is rudimentary in man, but it is more strongly developed in some individuals. This explains the difference in the degree of exophthalmos by the constant presence of myosis and ptosis. The second question, in which way the paralysis of the sympathetic nerve develops by an extirpation of the ganglion Gasseri is explained by the anatomical and physiological conditions well described by Ernst Jendrassik. The plexus caroticus internus by coming in contact with the ganglion Gasseri sends sympathetic branches to the ganglion spheno-palatinum through the nerv. petrosus profundus, i. e., in the nerv. vidianus. The fibres which go to the musculus orbitalis can be traced to the ganglion (Haase). By the resection of the ganglion Gasseri the ganglion sphenopalatinum becomes easily injured as the 2nd branch of the trigeminus is in close contact with the same. The symptoms of the paralysis of the sympathetic nerve disappear, and, if they remain, do not produce any disturbance. In spite of this, however, the surgeon should spare the ganglion sphenopalatinum by exact and careful severing of the second branch of the trigeminus.

### Thiersch's Transplantation on the Conjunctiva.

MOHR, MICHAEL DR. (*Pester Medizinisch-Chirurgische Presse*, January 28th, 1900.) Boy 13 years of age was received in M. clinik on Feb. 8th, 1899. The left eye was injured half a year ago by a branch of a tree. The region of the left eye, especially the upper lid was somewhat swollen. The ciliae of the upper lid are long and irregularly set and are pasted together by dried secretion. The conjunctiva of the lower lid and that of the bulbus is somewhat swollen. The outer part of the conjunctiva of the upper lid is covered by thick, fleshy, red granulations which secrete muco-purulent products, and are divided in different sized squares. On the larger nodules numerous, small, fine scars present geometrical figures. In the middle of the cornea there is a superficial, lentil size grayish opacity, to which a fine, parallel, dense vascularization leads from the upper margin of the cornea.

Diagnosis: Granulationes conjunctivae palp. super. post vulnus.

In order to avoid shrinkage after excochleation of the granulations it was necessary to cover the wound with epithelium. For this reason a Thiersch transplantation was made. In order to fasten the graft it was necessary to keep the eyelid everted; for this reason canthoplasty was made outward and upward, and the everted lid was fastened by two stitches drawn through the skin of the lid. The granulations on the conjunctiva of the everted lid were excochleated, and the margin of the intact conjunctiva was circumcised by a knife and removed by scissors. In order to cover the cornea the lower lid was brought nearer to the skin of the forehead by a suture. Then a Thiersch's graft of the size of 3 square cmtr. was taken from the inner side of the left leg and placed on the wound and then bandaged with sterile gutta-percha paper. The Thiersch graft remained attached. On the 8th day the everted eyelid was straightened. In the meantime there developed eczema of the face. The erosion of the cornea became ulcerated. On March the 8th the ulcer perforated. The marginal parts of the cornea, which were not yet adherent, were cut off and the softened epithelium was rubbed off. The patient was discharged from the hospital on January the 18th. In the place of the perforated ulcer there is a white scar, to which the iris is attached. On July the 13th an iridectomy was made, but as the patient was restless, vitreous escaped. It appeared also, at that time, that the lens was opaque, for that reason the opaque lens was removed on the 4th of August, and the patient left the hospital on the 11th of August.

At present patient sees with the operated eye quite well, with 10,0 D = $^5/_{30}$. The Thiersch graft remained attached.

### The Treatment of Keratitis Profunda.

GUTMANN E. DR. (*Wiener Klinische Rundschau*, Feb. 11, 1900.) The diffuse inflammation of the deeper layers of the cornea, keratitis profunda (known also by the name parenchymatous or interstitial diffuse keratitis) is a rarer affection than the superficial (scrophulous) keratitis, which forms a similar affection as eczema in the skin. The practical importance of this affection is not slight, as it has quite a long duration, it affects mostly both eyes (simultaneously or shortly one after the other) it causes a serious disturbance of vision and sometimes the impairment of vision is permanent, as it leaves behind persistent opacities. The onset of the affection is characterized by a small tongue-shaped opacity (consisting of leucocytes) which progresses from the margin of the cornea into its substance, shortly covers the entire cornea and floats in it like a cloud. There are pericorneal injections, sometimes a vascular formation in the substance of the cornea, occasionally an implication of the anterior part of the uvular tract (uveitis anterior). Clinically it is further important, that persons mostly in their second decade become affected, and there are signs of a constitutional affection. In a great number of cases there are signs of lues hereditaria or tuberculosis.

Regarding the treatment of this affection there is a great difference of opinion. While some use a general antiluetic treatment with mercury—others deny its usefulness; while some use local irritants only in the later stage, others use it in the beginning. Some use atropin, others consider it harmful; subconjunctival injections with sublimat were used by some with good results, by others with no results whatever. The author corroborates the opinion of A. v. Graefe, that the influence of treatment in diffuse keratitis is very slight, as the intensity and duration of this affection is very variable. This explains why the same method of treatment may in some cases be very useful, in others not. The author considers a general treatment with mercury absolutely useless, for most of the patients are of an age where the hereditary lues must be considered as being in its third stage and therefore mercury cannot have any effect. In small children only, where the lues is still in the second stage, the internal treatment with calomel is very effective. In older patients where the lues is in the third stage there is more effect to be expected from the administration of iodin with tonics (iron, cod liver oil). In most books atropin instillations are recommended as a local treatment. Nobody could expect that atropin will influence the process in the cornea. It can therefore be of use only by its property as a dilator of the pupil and thus will be able to prevent the formation of synechia. But as we know posterior synechia are quite rare in keratitis profunda, and if they occur at all they have the tendency to loosen again and to help this tendency, an instillation of atropin at long intervals will be quite sufficient, whereas a regularly continued use of atropin can help no more but can even do harm by producing an atropin catarrh. Local irritants (mercury, turpentine, iodid of potassium drops) make the condition worse, if they are used in the inflammatory stage. Concerning the subconjunctival injections with sublimate they are now mostly neglected, since it was shown that no mercury was absorbed in the interior of the eye. The treatment of keratitis profunda in the clinic of Magnus is as follows: As constitutional remedies are used tonics, iron, arsen, cod liver oil, if hereditary lues is found there is added iodin in the form of syrup ferri iodati 4-6 times per day there are instilled locally 10 drops of a 2-3% cocain solution by the attending physician. Atropin drops are instilled, 1 drop every 8-14 days in order to establish inactivity of the pupil. In severe pain the author has seen good results of warm applications of a 4% boric solution, salicylate of soda is sometimes also useful. Warm bath and perspiration may be used in involvement of the uveal tract.

The necessity of dark glasses and absolute rest of the eyes is obvious.

In conclusion he states:

1) The treatment with mercury (with the exception of small children) is useless and even harmful.

2) Atropin is without influence on the affection in the cornea and should be sparingly used.

3) Irritants are to be omitted during the inflammatory stage.

4) The systematic use of cocain is to be recommended as an agent which lessens the irritation and which seemingly has a good effect upon the corneal affection.

# OPHTHALMIC NEWS, ITEMS AND ANNOUNCEMENTS.

(Under this heading the ANNALS will publish items of interest. Please address Dr. B. E. FRYER, 520 E. Ninth Street, Kansas City, Mo.

Dr. van Duyse has been made Professor of Ophthalmology in Ghent.

Privatdocent Dr. Groenouw has received the promotion to Professor at Breslau.

Professor Mellinger has received the appointment of Professor in ordinary of the diseases of the eye at Munich.

Privy Counsillor v. Hippel has begun his twenty-fifth year as Professor at Halle.

Mr. Hugh E. Jones, M. R. C. S., L. C. R. P. has been appointed Honorary Surgeon to the Eye and Ear Infirmary at Liverpool.

The meeting of the Society of German Naturalists and Physicians will be held this year from September 17 to 21, at Aachen.

Professor von Michel, of Wurzburg, has received a call to the University of Berlin.

Dr. W. A. Shoemaker, of St. Louis, is now Assistant Editor of the American Journal of Ophthalmology.

Dr. W. T. Montgomery, of Chicago, has gone to Europe for the summer months.

Dr. J. G. Huizinga has been appointed Professor of Ophthalmology in the Chicago Post Graduate Medical School.

At the last meeting of the American Ophthalmological Society Dr. Dunbar Roy, of Atlanta, Georgia, was elected an Associate Member.

Dr. H. L. Dickey has been appointed to the eye, ear and throat department of the Charlottetown (P. E. I.) Hospital.

Dr. E. Oliver Belt has moved his office to 922 Farragut Square, Washington, D. C.

Mr. G. Constable, F. R. C. S. Eng. has been appointed Assistant Ophthalmic Surgeon to the Leeds Infirmary.

Dr. A. Friedmann, who was connected with the Ophthalmic and Aural Institute of New York, has moved to Colorado Springs, Colorado.

The well known ophthalmic surgeon Dr. Stavros Metaxas, died quite recently at Marseilles, in his 75th year. He was born in Kephalonia.

Mr. H. S. Walker, F. R. C. S., has been appointed Surgeon to the Department of the Eye and Ear at the Leslie Infirmary, in Place of H. B. Hewetson, M. R. C. S., deceased.

Dr. Percy Friedenberg, Assistant Surgeon to the New York Eye and Ear Infirmary has devised a very ingenious mirror test instrument for the detection of simulated blindness.

The well known oculist Poncet, of Paris died recently at Vichy. Besides his "Atlas des maladies profondes de l'oeil," he made other valuable contributions to ophthalmic literature.

Dr. B. E. Fryer has been reelected Oculist to the German Hospital, Kansas City, Missouri, and also Consulting Oculist to the St. Margaret's Hospital, Kansas City, Kansas.

Dr. Troncoso, of Mexico, is endeavoring to induce the Mexican authorities to establish a system of examination of the vision and hearing of the trainmen of the Mexican railways.

Mr. F. A. Tyrell, F. A. C., B. A. M. B , M. R. C. S., L. R. C. P., has received the appointment of Junior Surgical Officer to Out Patients, Royal London Ophthalmic Hospital.

A draft of a law has been introduced into the New York legislature, which provides for the erection of a hospital for the reception and treatment of contagious eye diseases; it will be located on Manhattan Island.

Dr. Amy S. Barton died March 19th last, at the age of 59. She was graduated from the Woman's Medical College of Philadelphia in 1874; she was professor of ophthalmology at that institution several years,

Doctor Mitvalsky of Prague is dead. He was well known mainly through his studies upon Intraocular tumors, (Cysts of the orbit, Choroidal Sarcoma, Sinus Osteomata, Metastatic Ophthalmititis, and Thrombophlebitis).

"We are glad to inform our readers that Dr. Charles A. Oliver of Philadelphia has been commissioned to rewrite and bring up to date the Chapter on Color-Sensation and Color-Blindness in Buck's "Reference Handbook of the Medical Sciences."

Dr. Elizabeth Sargent, who was an oculist of San Francisco, died on Febr. 6th. She was the daughter of ex-United States Senator Aaron Sargent of California. Dr. Sargent studied at Zurich, and was for eight years oculist to the Childrens' Hospital.

The headquarters of the Section on Ophthalmology of the American Medical Association for the meeting in Atlantic City, New Jersey, June 5-8, 1900, will be at Hadden Hall. The Scientific meeting will be held in the assembly room of the Windsor Hotel. The banquet of the section will be held at the Grand Atlantic Hotel 7:30 p. m., Tuesday, June 5th. The ladies are invited to attend the section dinner.

The new Institute of Physics and Physical Chemistry was formally dedicated by the University of Giessen, February 19. The Institute is in every respect thoroughly modern, undoubtedly one of the best laboratories for physics to be found in Germany.—Phila. Med. Journal.

Suit for Loss of Eyesight.—An employee has begun suit for $10,000 against a Chicago brewing company for the loss of his eyesight. His work consisted in shellacing barrels and kegs, and it is asserted that the wood alcohol fumes gradually destroyed his sight.—(Ophtalmic Record).

Dr. H. V. Würdemann of Milwaukee, January 25th, delivered a most interesting lecture at the Northwestern University Woman's Medical School on "Injuries to the Eye." The lecture was profusely illustrated with many beautiful pathological eye specimens preserved in cups.—(Ophthalmic Record).

Dr. Charles Zimmermann, of Milwaukee, has been added to the staff of the Annals of Ophthalmology. His name has been associated with the progress of ophthalmology for nearly twenty years. His work will be mostly in connection with that of Dr. R. L. Randolph in the department of German ophthalmic literature.

An examination into the condition of the sight and hearing of the children in the Milwaukee public schools has been instituted by Dr. H. V. Würdemann, by request of the Milwaukee School Board, under the direction and authority of the Board of Health. He has associated with him in his work Dr. Nelson M. Black, Dr. John S. Barnes and Dr. Charles Zimmermann. The general plan of the investigation is that so satisfactorily carried out in the public schools of Minneapolis by Dr. Frank Allport, who, after removal to the city of Chicago, instituted a like investigation.

Ocular Phenomena Associated with Cheyne-Stokes Respiration—G. Y. Eales noticed in a man, aged sixty-one years, with cardiac valvular trouble, Cheyne-Stokes respiration, observing that during the interval of the series of respirations both pupils remained stationary and somewhat contracted, but as a new cycle came on they both gradually became widely dilated and so remained during the height of the cycle.—(New York Med. Record.)

Dr. Woolsey Hopkins, of this city, died on February 15th from pneumonia, at the age of thirty-two years. He was born in Alexandria, Va., and was graduated from the College of Physicians and Surgeons, New York, in the class of 1890. He was assistant surgeon to the Manhattan Eye and Ear Hospital, and was a member of the American Laryngological, Rhinological and Otological Society. A widow and two children survive him.—N. York Med. Record.

Chicago Ophthalmological and Otological Society.—At a meeting held January 9, Dr. C. D. Westcott was elected president, Dr. Casey A. Wood vice-president and Dr. C. P. Pinckard secretary-treasurer. The membership-committee consist of Drs. Wilder, Ware and Coleman. Dr. William E. Gamble showed a case of interstitial keratitis, and Dr. Oscar Dodd one of quinin amblyopia. Dr. J. E. Colburn reported a case of methyl-alcohol poisoning.—(Phila. Med. Journal).

We are glad to announce the issuance of an important monograph —"Injuries to the Eye in their Medico-legal Aspect, by S. Baudry, Professor in the Faculty of Medicine, University of Lille, France etc. translated from the original by Alfred James Ostheimer, Jr., M. D., of Philadelphia, Pa. Revised and edited by Dr. Charles A. Oliver, A. M., M. D., with an Adaption of the Medico-legal Chapter to the Courts of the United States of America, by Charles Sinkler, Esq., Member of the Philadelphia Bar,

Dr. Sydney Stevenson reports in the British Medical Journal, March 17, 1900, his experience with a new salt of silver—Largin—in certain diseases of the eye, in conditions similar to those in which silver nitrate is indicated. Stephenson states that Largin causes no pain, even when in concentrated solutions. While quite efficient in the destruction of most of the microbes which are found in the conjunctiva, including the Koch-Weeks' bacillus, the microbicidal power of Protargol and Silver Nitrate is greater in gonorrhoeal ophthalmia. Merck claims that Largin contains 11.1 per cent. of metallic silver.

Tho editor of this department has very recently had, through the courtesy of Dr. A. Alt of St. Louis, an opportunity of examining more than a hundred micro-photographs of eyelid sections of both upper and lower eyelids prepared by Dr. Alt. These reveal the fact that our knowledge of the histology of the eyelids is very incomplete —that that there are numerous glands of more than one kind hitherto undescribed and unknown. Alt has made over a thousand sections of the eyelids, and will probably publish a monograph, which must be a surprise to histologists, and which will be of surpassing interest to ophthalmologists, both histologically and clinically.

Milton's blindness resulted from Glaucoma.—According to the West London Medical Journal, Milton was induced by a friend to write out in full the details of his case, in order that the notes might be sent to a Parisian oculist, named Thevenot, for his judgment and advice, and the following is an abridged account of Milton's communication: "It is now, I think, about ten years since I first perceived my sight to grow weak and dim. When I used to sit down to read as usual in the mornings, my eyes gave me considerable pain. If I looked at a candle, it appeared surrounded by an iris. In a little time, a darkness, covering the left side of the left eye (which was partially clouded some years before the other) intercepted the view of all things in that direction. Objects, also, in front seemed to dwindle in size whenever I closed my right eye. Before I wholly lost my sight, as soon as I lay down in bed and turned on either side, brilliant flashes of light used to issue from my closed eyes; and afterwards, on the gradual failure of my powers of vision, colors, proportionately dim and faint, seemed to rush out with a degree of vehemence and a kind of noise. These have now faded into uniform blackness, such as ensues on the extinction of a candle. The constant darkness, however, in which I live day and night, inclines more to a whitish than a blackish tinge, and the eyes turning round admit, as through a narrow chink, a very small portion of light."—(Philadelphia Med. Journal).

The following is a brief extract from the March No. of the Klinische Monatsblätter für Augenheilkunde.

Paris—In France Ophthalmology has noted an important advancement; the "Assistance Publique" in Paris has determined upon the placing of Opthalmological chief physicians in the hospitals, which conforms to the head of surgical, medical, and gynecological divisions. The first competitive examination will take place May 28th. It is an important event to the French Opthalmologists; for there are till now no "Professeurs Aggreges" in the French Universities, and as only six Universities have professors, the prospect of a permanent position and a title for French Ophthalmology has surely advanced; the regular professors of the medical science of the eye have arisen from general surgery. It is to be hoped that in the rest of France the same conditions are to be met.

St. Petersburg:—On Jan. 30th the director of the hospital of the science of the eye of St. Petersburg, Dr. Graf Magawly, left after forty years efficaciousness to take up his sojourn in a foreign country. What our society, what our college sphere, and those that depend on him lose by his going away—everyone knows who has had the honor and good fortune to become intimate with him: scholars and subordinates, schools and colleges, friends and patients. They take the occasion to send back to him a word of respect and thanks for everything that he has been to us, and what he has accomplished in our midst.

Forty years of his life has Dr. Magawly dedicated to the services of the medical science of the eye. In the year 1859 about the same time with his fellow-student and friend, Dr. Robert Blessig, he was appointed Ordinator. Both of them, as inspired students of Albert v. Graefe, through their inner friendship, became allied as the first workers of that time, rising through Helmholtz and Donders, Arlt and Graefe's newly enlivened Ophthalmology. During their mutual activity under Blessig's direction, 1863 to 1878, the profession had already made a great advancement. As Dr. Magawly was appointed director after Robert Blessig's death, it was his ambition to develope farther the arrangements of his never forgotten dead friend. In what high measure and with what consequence he has succeeded as the director and chief physician, the further developement of his work in the last twenty two years gives good evidence. The necessity has doubled itself in the last twenty five years, the opportunities have increased, the whole inner preparations and arrangements have been completed, in the adopted way, and now as he leaves the work he has the satisfaction of being able to surrender it in a model condition. The highest and best that he has contributed does not allow itself to be expressed either in dates or numbers, those that served under him know, what was the spirit which he let rule in the direction. No matter how lowly or miserable was the patient, the more humanely he treated him, the more ready he was to help him. To the weak protection—to the strong, alliance was the leading motive of his knightly being from beginning to end. From his subordinates he expected and awaited nothing but pure inclination and love for his cause; where he found these, he individually showed the greatest liberality and care; there he did not ask after descent or nationality. Everyone he let work and learn freely, and demanded good efforts according to his strength. Over these significations, which the name Magawly in the Ophthalmological world at home and abroad expects, no word need here be added. In our city he was acknowledged to be the first authority in his cause. Besides his work in education he had a large practice. Although he never strove for fame, many high honors fell to his lot. The marriage of Emperor Alexander II called him to the position of life time occlist."

In the name of all pupils, collegiates and friends we wish a speedy and complete recovery in the sunny south to this highly deserving man, and then a happy otium cum dignitate.

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(Signed) ELSCHNIG.

## New Title for Refractionists.

The question of a proper designation for practical refractionists has been vigorously discussed from time to time, but no definite conclusion has been reached on the matter, though it cannot be gainsaid that the word "optician" is a misnomer, meaning, as it does, one who makes or sells optical glassses and instruments. The solution of the question seemed to be furnished by the Century and Standard dictionaries, which give the word "opticist," defining it as "a person skilled or engaged in the study of optics; optics being that branch of physical science which treats of the properties of light, lenses and mirrors, of the construction of the eye and the laws of vision."

In regard to the term "opticist," however, there is one important consideration which may become a boon to the qualified refractionists and serve to some extent at least to purify and legitimatize the profession. The word "opticist" was coined by Charles F. Prentice, M. E., the eminent New York optician, and is not general property. It was copyrighted in due legal form, as recorded by the librarian of Congress, in 1886 and registered in the United States Patent Office in 1889 as trade-mark No. 16698. The fact that this word "opticist" has since been accorded its proper place in the English language, or that persons are practicing as opticists, does not, however, entitle any one to apply the word "opticist" to his individual commercial use without previous sanction. In view of this, the trade will be pleased to learn that the American Opticist Co., 177—179 Broadway, New York, has been organized for the purpose of vigorously protecting the term "opticist" and licensing its use to qualified refractionists of known professional attainments. This company has secured exclusive control of the copyrighted term from Mr. Prentice and will make contracts for its use with opticians of standing in the profession. We understand that itinerants and bogus refractionists of all kinds will be debarred from the privilege, so that the word will, in a measure, give a professional status to the holder.—The Key Stone. April 1900.

# OBITUARY.

## DR. EDWARD L. HOLMES.

Dr. Edward L. Holmes, president of Rush Medical College from 1890 to 1898, and a widely known eye and ear specialist, died February 12th, of pneumonia, at the home of his son-in-law, Dr. E. A. Gray, 158 Evanston avenue, Chicago. Dr. Holmes took a severe cold several days ago while firemen were extinguishing a blaze at Dr. Gray's house, and Monday it developed into pneumonia.

Dr. Holmes has been prominent in Chicago medical circles almost from the moment of his arrival here in 1856. In 1858 he founded the Illinois Eye and Ear Infirmary at Adams and Peoria streets, and in 1884, with Drs. J. Adams, Allen, Charles T. Parkes and J. H. Etheridge, all of whom are now dead, he was also a founder of the Presbyterian Hospital.

His association with Rush Medical College began in 1860, when he was appointed a lecturer on eye and ear diseases. In 1867 he was given a professorship there, and from that time until 1898 he was affiliated with that institution. He was made its president in 1890, to succeed President J. Adams Allen, deceased. His resignation, due to his advanced years, took place on his seventieth birthday, January 28, 1898.

For five years after his arrival in Chicago, Dr. Holmes lived at Clark and Kinzie streets, and then moved to Division and State streets, where he was at the time of the great fire. Subsequently he lived on the West Side, at Monroe and Robey streets, and in West Adams street. For three years he made his home with Dr. Gray.

Dr. Holmes was born in Dedham, Mass., in 1828. He was graduated from Harvard at the age of twenty-one, and taught for a time in the Roxbury Latin School. In 1854 he obtained his degree of doctor of medicine from the Harvard Medical School, and the next year he spent as an interne of the Massachusetts General Hospital at Boston, making a specialty of diseases of the eye and ear.

To continue his studies in these diseases further he went to Europe, and was engaged in active hospital service in Paris and Vienna for a year and a half.

Dr. Holmes was a trustee of Lake Forest University, and was connected, either in an honorary or an active capacity, with almost every medical institution of importance in the state. He was a director in the Central Free Dispensary, a member of the Physicians' Club, the Chicago Medical Society, and a life member of the Illinois State Medical Society. He was also an honorary member of the Ophthalmological and Otological societies.

Dr. Holmes married Miss Paula Weiser, of Vienna, in 1862. He leaves six chidren, Mrs. E. A. Gray, Mrs. R. H. M. Dawbarn, Miss Jennie Holmes, E. L. Holmes and R. W. Holmes.

The funeral was held at the family residence February 14th at 3 o'clock. Burial was at Rosehill.

It is not too much to say that Dr. Holmes was universally honored and respected by all who ever knew him. Until age and infirmities afflicted him he was progressive and enterprising in his profession. He had a peculiarly gentle and kindly presence. He was particularly thoughtful and considerate of young practitioners, and was never known to say an unkind word of anybody. He will be missed by all who knew him, and his example may safely be followed by all who desire to practice medicine in the highest and noblest manner.—Ophthalmic Record.

# OBITUARY.

## ALBERT MOOREN.*

We are again called upon to mourn the death of one of A. von Graefe's oldest pupils, the highly talented and meritorious oculist, Albert Mooren.

He was born at Oedt, near Kempen, on the nether Rhein, in 1828, and received his primary education at Kempen and at the Catholic Gymnasium at Koeln. He studied medicine first at Bonn, under Weber, Wutzer, Harless, Kilian and Bischoff; then at Berlin, under Johannes Mueller, Juengken, Traube, Baerensprung and A. von Graefe. It was there that he made his doctorate in 1854, and passed the State's examination in 1855. The near relations into which, while still a student, he entered with Albrecht von Graefe had a deciding influence upon him, and he studied ophthalmology zealously at Graefe's private hospital. He first practiced general medicine in his native city of Oedt, but soon made a name for himself throughout the Rhenish provinces by a successful eye operation, and was, in 1862, called to Duesseldorf to assume the direction of the Municipal Eye Hospital. He was the head of this institution for 21 years and there displayed an immense, especially operative, activity. Patients came from near and far, not only from the Rhenish provinces, but also from Belgium, Holland, England and France. The highest circles honored Mooren with their confidence. Even the directorship of the Eye Hospital at Lüttich was intrusted to him in 1868. He traveled there every four to six weeks in order to perform the more important eye operations. In 1878 he resigned this position, as also in 1883 the Directorship of the Duesseldorf Eye Hospital. Yet, he retained an extensive private ophthalmic practice until his death. He received the titles of Professor and Secret Medical Counsellor (Geheimer Medicinal Rath) from the Government. The city of Duesseldorf exalted him by conferring on him the honorary citizenship. In 1887, during the Internatinal Medical Congress held at Washington he fell dangerously ill with dysentery; under the tender care of Prof. Mendel, however, he succeeded in safely returning home, and gradually recovered from the sequelæ of this insidious disease. His happy family life was severely disturbed by the death of his oldest son, who, at Marburg, saved a child from drowning, but in the act lost his own life. In 1896 Mooren went to the International Medical Congress at Moskow, and in 1898 he presided over the Congress of German Physicians at Duesseldorf. In the last winter, however, he could not take his usual trip to Berlin, and died after a short illness in the evening of the last day of the year 1899.

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*J. Hirschberg in "Centralblatt fur Prakt. Augenheilkunde."

Albert Mooren was a very fruitful writer in his specialty. He was materially assisted in the building up of what we call modern ophthalmology. However, those who knew him from literature only, cannot fully appreciate him; he had to be seen at the operating table; he was one of those blessed artists who are born but rarely; aside from this he was a noble man, deeply religious, full of warm love for humanity, one who naturally imbued his patients with the greatest confidence. Of course, on account of his success, he was envied by some; but to his friends he was a warm friend. Our professional friendship has lasted for 32 years without the slightest disturbance. His memory will remain fresh, not only in science, but also in the hearts of those whom he benefitted.

The following is a list of his most important works:

(1) On Retinitis Pigmentosa, Duesseldorf, 1852; (2) Diminishing the Dangers of Suppuration of the Cornea after Cataract Extraction, Berlin, 1862; (3) Treatment of Conjunctival Diseases, Duesseldorf, 1865; (4) Ophthalmetric Observations, Berlin, 1867; (5) Sympathetic Eye Troubles, Berlin, 1869; (6) Ophthalmological Communications, Berlin, 1874; (7) On Blood-Vessel Reflexes in the Eye (together with Rumpf), Centralblatt f. Med. Woch., 1880; (8) The Pathogenesis of Sympathetic Eye Troubles, Klin. Monatsbl. f. Augenh., 1881; (9) Visual Troubles and Uterine Disease, Arch. f. Augenh., X; (10) Contributions to the Clinical and Operative Treatment of Glaucoma, Duesseldorf, 1881; (11) Five Lustra of Ophthalmic Practice, Wiesbaden, 1885; (12) Skin Affections and Eye Diseases, Wiesbaden, 1885; (13) Some Remarks on the Development of Glaucoma, Arch. f. Augenh., XIII; (14) Eye Troubles in their Relation to Occipital Disease, International Medical Congress at Washington, 1887; (15) The Simplest Method of Cataract Extraction; (16) Eye Troubles and Compensation, Klin. Monats. f. Augenh., 1890; (17) Massage in Eye Disease, Arch. Med. Belg., 1890; (18) The Eye Troubles of Laborers and the Compensation Demanded for Them, Duesseldorf, 1891; (19) The Limits of Cataract Discission, Deutsch. Med. Woch., 1893; (20) The Operative Treatment of Naturally or Artificially Ripened Cataract, Wiesbaden, 1894; (21) The Operative Treatment of Myopia, Wiesbaden, 1896.

Albert Mooren was of excellent general culture and was a student of philosophy, of modern languages, especially Spanish, and he reedited the "Chronicles of the Diocese of Koeln" which originally had been published by his uncle.—American Journal of Ophthalmology.

Probably few patients have carried parsimony to the height pursued by a certain baronet, Sir William Smyth, who, although immensely rich, was never happier than when trying to evade doctor's bills. For instance, he once made a bargain with a great oculist to couch both his eyes, agreeing to pay 60 guineas if his sight was at all restored to him. The operation was made and proved so successful that he was enabled to read without glasses.

No sooner, however, was this state of affairs reached, than the miserly baronet began to grieve at the thought of paying the promised fee, and he therefore pretended that he could see nothing distinctly, and to sustain the pretense, he submitted to wearing the bandages for some weeks over the usual period. When the time expired he still contended that he had only the faintest glimmering of light. with the result that the badgered physician compromised the business by accepting 20 guineas instead of 60.

Cases of this kind are by no means rare in the experience of medical practioners. A doctor attended a patient for influenza of rather a bad type, and when the cure was completed sent in his bill at the ordinary rates. It was, however, returned to him with a note from his late patient hinting that, as the influenza was at the time in the nature of an epidemic, and the doctor had doubtless reaped considerable benefit from it, he ought to make a considerable reduction in his bill in view thereof. However, the physician did not fall in with this excentric and stingy proposition, and eventually the bill was paid as it stood, though not without many more protests from the payer.

Another patient, who prided himself on his medical knowledge, was in the habit of making suggestions to the doctor who attended him during illness, which suggestions the doctor would sometimes good naturedly adopt, more for the sake of gratifying the patient than for any other reason. Judge of the medico s astonishment, however, when the amateur Hippocrates actually refused to pay more than half the bill on the grounds that at least "50 per cent. of the cure had been due to his unaided suggestions in the treatment."

Audacity and penuriousness could hardly have gone further than this, and under the circumstances it is not surprising that the physician not only insisted on full payment, but refused to attend the gentleman further,

Specialists can tell many tales of parsimony in the people who consult them. An eminent lung physician once received a visit from a Sussex farmer, whose trouble proved to be merely imaginary, and whose mind was soon set at rest. On his departure he offered the specialist five shillings, and on the latter pointing out that his fee was two guineas, the worthy agriculturist scratched his head and said that he considered such a sum far to much for "telling a man he had nothing the matter with him."

Another gentlemen of similar tendensies, who consulted an ear specialist, was thunderstricken when asked for a fee of one guinea, as he averred that scarsely three minutes had been consumed in the consultation. The doctor pointed out that it had taken him over thirty years to obtain the experience which condenced a consultation into three minutes, but the obstinate consultant refused to take this view, and eventually prevailed upon the physician to accept half the sum named. It may be added that this parsimonious person was in receipt of an income that ran into many thousands per annum.—(Abstracted from the New York Herald by the Milwaukee Medical Journal.)

# BOOK NOTICES.

### Injuries to the Eye in their Medico-Legal Aspect.

BAUDRY, S., M. D., Professor in the Faculty of Medicine, University of Lille, France, etc. (Translated from the original by Alfred James Ostheimer, Jr., M. D., of Philadelphia, Pa. Revised and edited by Charles A. Oliver, A. M., M. D., Attending Surgeon to the Wills Eye Hospital; Ophthalmic Surgeon to the Philadelphia Hospital; Member of the American and French Ophthalmological Societies, etc. With an adaptation of the Medico-Legal Chapter to the Courts of the United States of America, by Charles Sinkler, Esq., Member of the Philadelphia Bar, $5^5/_8$ x $7^7/_8$ inches. Pages, 161. Extra Cloth, $1.00 net. The F. A. Davis & Co., Publishers, 1914-16 Cherry St., Philadelphia, Pa.

There is a definite place in ophthalmologic literature for a work of this character. Indeed, until now, there has been no English publication upon the Medico-Legal aspect of injuries to the eye and the text-books have been generally deficient in this regard.

Traumatic lesions of the eye and of the adnexa occur most frequently in industrial localities, where, for instance, metal factories, machine-shops, quarries and mines predominate. Almost daily this type of cases comes to the physician; and, since many such injuries produce dimness of vision or give rise to complete blindness, and thereby, at times, become the cause for suits for damages, he is often called upon to state, in a medico-legal way, the cause, the nature, and the consequences of such traumatisms.

In certain cases the eye may be the seat of congenital anomalies, or it may exhibit more or less serious acquired lesions that have antedated the alleged accidental cause of the condition, and this, perhaps, unknown to the patient; so that at times, it becomes necessary to differentiate whether a loss of vision, which may be partial or complete, is due to some definite injury or whether it is dependent upon some previous pathological change.

Laborers with a traumatic lesion of the eye often purposely neglect to follow a prescribed form of treatment; they may exaggerate the consequences of an accident; and frequently they may be induced to simulate blindness, in the hope of obtaining the largest redress that is possible under such circumstances.

As the answer to these different questions so frequently offer difficulties, and requires of the legal expert a profound knowledge of both the internal and the external diseases of the visual apparatus, it becomes obligatory that he be made fully aware of their medical significance, this being further emphasized by the fact that it frequently becomes necessary, during the hearing of suits for this class of injuries, for the Court to call for the testimony of a specialist on diseases of the eye.

Even at a moment's notice the expert may be asked for his opinion by a corporation or by an individual regarding the gravity of an injured eye, or to give answer as to the visual function of persons whose interest induces them to assert that they cannot see, or that they do not see sufficiently well to pursue their occupations.

To guide the expert, and to make it easier to estimate accurately the damage caused by the injury to the individual, the author has attempted to present in this monograph a concise account of the traumatic lesions of the eye and of its adnexa, treating them especially from a prognostic stand-point. He has taken this opportunity to collect his personal observations,—the larger part of which has not been published, as well as to compile the reports and published conclusions of his predecessors and colaborators.

As it is important that the medical expert, after having made a diagnosis, should not commit any legal error, a statement of the mode of procedure to be pursued in a medico-legal examination has been given in the final chapter of the book. The legal portion of the chapter has been written by Professor Jacquey, of Lille.

This work, which has achieved such reputation in France as to demand a second edition, was sent to the editor by the author with the statement that, should the contribution be deemed sufficiently interesting and useful, a translation would be permitted. Careful reading of the original by the editor proved the work to be of so much value that he determined to accept the task and to present an English adaptation to the medical profession.

The American edition of Baudry's work, while following the original, has been thoroughly revised and edited by Dr. Oliver and the part comprising the American methods of jurisprudence has been done by Mr. Charles Sinkler.

Aside from its value as a treatise upon medical jurisprudence it is a text book upon prognosis of injuries to the eye, and a work which is highly acceptable to the general medical profession as well as the oculist. The work is heartily recommended and should be added to the library of every progressive physician.

H. V. WÜRDEMANN.

### A Card for Testing of the Finer Color Sense.

COHN, PROF. DR. HERMAN, of Breslau. (Oscar Coblentz, Berlin, 1900. Price 1.20 M. (30c).

This test for partial color blindness consists of a purple card upon which are printed 16 of the illiterate figures (E) of Snellen in black. The patient is require to look at the card at 6 m. and to tell by a wave of the hand which is the open end of the figures, then the card is covered by a thin piece of translucent paper which accompanies it and looked at under a strong light, when to the normal eye the figures will appear as green. The partial or fully color blind person will be unable to see any figures at all and will declare they are completely obscured. It is a very fine test but should be substantiated by others. The text accompanying the card gives statistics, showing that the test developes in adults about 4 per cent. color blind, and declares that any one who cannot see the figures when obscured by the translucent cover does not possess good color sense.

H. V. WÜRDEMANN.

### The Science of Higher Prisms.

ALLEN, EDMUND TURNEY, A. M., M. D., Ph. D., Professor of Ophthalmology in the Dunham Medical College; Instructor of the Correspondence School of Optics; Oculist to the Hermitage Hospital; Ex-Secretary of the Nebraska State Board of Health. (Geo. H. Hazlitt and Co., Chicago. 1900. 12mo., 113 pages, cloth $1.25).

I am moved to the review of this book largely by reason of the notoriety which it has achieved through the pushing of its advertisement by means of the wholesale opticians. The title of the treatise would lead one to suppose that it dealt mainly with the use of prisms. It is however a digest of some writings on muscular imbalance elaborated and embellished by the personal opinions of the author. Quotations are made from the essays of Stevens and Savage, but the bulk of the book is an exposition of the ocular-muscle-reflex-symptom extremist. The author has been "Instructor of the Correspondence School of Optics" and used to sell the "knowledge" contained in these 114 pages to opticians and others, in the form of lectures sent by mail, price $25.00. A number of affidavits from persons outside the medical profession are appended in the advertising pages. He also issues "A beautiful Latin certificate or diploma" upon the "nominal payment of $5.00" to those answering a series of examination questions at the end of the book. A list of persons having "won" the certificate is given.

Its dedication "To all those who in order to benefit their fellowmen are willing to study and work," is admirable, but the scientific ophthalmologist would certainly take exception to very many of the statements contained in the book. For instance: that a certain deceased gentleman, president of a well known optical company "Had an exophoria of nearly 90° which was mostly latent and was wholly concealed during life and which had it been corrected in time by higher prisms might not so sadly have undermined his vitality as to cause his premature death." Likewise, that it is necessary to advance one and a half degrees at a time in correcting muscular imbalance by prisms or operation, watching the effect on the general system. Doubt may also be cast upon the necessity of a physician having to operate 500 times within a few years "Without the loss of a single eye" for heterophoria, which the author claims to have done. Such extensive operating for phoria or squint is certainly superfluous and a pernicious practice.

The opinions of a certain "Justly famed Dr. Chalmer Prentice of London, formerly of Chicago," etc. as regards the curing of diabetes, insanity etc. by ocular muscle operations and prisms, are extensively quoted. The correction of heterophoria, more especially exophoria and the development of so-called reverse or latent muscular defects by progressive prismatic increase and treatment of the artificial heterophoria so produced by tenotomy, seem to be the author's practice. Such publications as this warp the truth beyond recognition and can serve no good purpose.

H. V. WÜRDEMANN.

## A New Test Card for Illiterates.

B. KAHN & SON of New York have printed a vision test consisting of spot playing cards in black and red, which may at times be useful in the case of illiterates and children.

H. V. WÜRDEMANN.

## A Pocket Medical Dictionary,

Giving the Pronunciation and Definition of the Principal Words Used in medicine and the Collateral Sciences. By George M. Gould, A. M. M. D. Fourth Edition revised and enlarged, 30,000 Words, 837 Pages. Philadelphia, P. Blackiston's Son & Co., 1900. Demi Mo. $1.00.

Gould's Dictionary stands for all that is thorough and exhaustive in the modern doctor's armamentarium. The one before me is the small pocket book, that might encumber the coat but that could be easily carried in the bag, but its usefulness under all circumstances may be demonstrated by any one who will have it within easy reach of the hand. Besides the ordinary list of words—to which short but explanatory definitions are attached, there are given various tables of clinical eponymic terms (invaluable, too,) alphabetic lists of arteries, muscles, nerves, bacteria, bacilli, micrococci, spirilli, scales for thermometric readings, a dose list of drugs and their preparations in both English and Metric systems, with comparative tables of weights and measures.

Derivations are omitted, but pronunciations are well indicated.

I will not say that the book is perfect, but so far I can find no fault with it, and I use it every day. The fact that there are over one hundred thousand copies of GOULD already sold, shows that its popularity is not confined to myself. It is worth many times its price.

A. B. HALE.

### The American Year-Book of Medicine and Surgery.

Edited by Geo. M. Gould, M. D., Philadelphia, Pa. The Volume on Surgery is a handsome imperial octavo of 560 pages including index, the style of make-up being the same as the American Text-book Series and is published by W. B. Saunders, Philadelphia, Pa. In two volumes, price, cloth $3.00, half morocco $3.75 per volume.

The Year-Book consists of abstracts from medical and surgical journals, monographs and text-books by the foremost authors and scientific investigators, both American and foreign; collected, arranged and criticised by men whose names alone on the title page give the book a standing as peer among the works of its character in the world. It is illustrated by well chosen, instructive and finely produced cuts; the type is large and clear cut; paper good, as in all the above publisher's books of this style.

The contents of the surgical volume are divided under the following heads:

General Surgery—W. W. Keen, M. D., and J. Chalmer DeCosta, M. D., Philadelphia, Pa.

Obstetrics—Barton Cooke Hirst, M. D., and W. A. Newman Dorland, M. D., Philadelphia, Pa.

Gynecology—J. Montgomery Baldy, M. D., and W. A. Newman Dorland, M. D., Philadelphia, Pa.

Orthopedic Surgery—Virgil P. Gibney, M. D., and J. Hilton Waterman, M. D., New York, N. Y.

Ophthalmology—Howard F. Hansell, M. D., and Wendell Reber, M. D., Philadelphia, Pa.

Otology—Charles H. Burnett, M. D., Philadelphia, Pa.

Diseases of the Nose end Larynx—E. Fletcher Ingals, M. D., and Henry Gohl, M. D., Chicago, Ill

Anatomy—C. A. Hamann, M. D., Cleveland, O.

The book is one no busy and progressive practitioner or specialist can afford to be without, for not to be abreast with the scientific progress of this age of survival of the fittest, is to be lost, and when the salient points of medical and surgical progress of the world are brought to us in this guise, well selected and criticised so that a glance is all that is necessary to keep up instead of having to peruse what would otherwise be dull and uninteresting detail | why it may incline us to be lazy—but then "life is short-"

NELSON M. BLACK.

### Ophthalmic Diseases and Therapeutics.

NORTON, A. B., M. D., Professor of Ophthalmology in the College of the New York Ophthalmic Hospital; Surgeon to the New York Ophthalmic Hospital; Visiting Oculist to the Laura Franklin Free Hospital for Children; Ex-President American Homeopathic Ophthalmological, Otological and Laryngological Society; First Vice-President American Institute of Homeopathy; President Homeopathic Medical Society of the State of New York; Editor of the Homeopathic Eye, Ear and Throat Journal; Associate Editor Department of Ophthalmology, North American Journal of Homeopathy, etc., (Second Edition revised and enlarged with ninety illustrations and eighteen chromo-lithographic figures. Published by Boericke & Tafel, Philadelphia, Pa. Price, cloth, $3.50; half morocco, $4.50.)

A book of 647 pages divided in two parts. Part I consists of twenty-two chapters and takes up 482 pages devoted to examination of the eye, use of ophthalmoscope, refraction and accommodation, dioptometry, hygiene of the eye and diseases of the different anatomical structures.

Part II is devoted to homeopathic ophthalmic therapeutics from "acetic acid to zincum." The whole book is a condensed abstract from well known authors with the addition of homeopathic therapeusis, see Chapter VI of part I, a Tabulated Statement of Characteristic Eye Symptoms found in general diseases taken from "The Eye as an aid in General Diagnosis," by E. H. Lindell, M. D.

The author's treatment of the various conditions found is practically that used in the general practice of ophthalmology followed by a long list of homeopathic materia medica to be taken internally; for instance, three pages are taken up in a description of blepharitis and its local treatment and five pages to the homeopathic internal remedies, each one for a slightly different symptom. The book without these would be an ordinary small sized text-book for students. The space devoted to homeopathic therapeusis may perhaps be appreciated by the practitioner who is supposed to practice "homeopathically." NELSON M. BLACK.

This edition of Dr. Norton's work is much superior to the first, published in 1892. It has been thoroughly revised and enlarged, about one hundred pages of new material having been added. The bulk of this edition is devoted to examination of the eye, use of the ophthalmoscope, refraction and accommodation and hygiene of the eye and is told in language readily understood by the student or general practitioner.

Chapter VI is under the heading, a Tabulated Statement of Diseases with more or less Characteristic Eye Symptoms and is a valuable addition to a work on the eye. It groups into a few pages facts that would require hours of search to cull from works on general medicine.

The general diseases of the eye are well handled and are divided under their various anatomical headings. The ground is well covered, only a few of the very rare forms of disease not being mentioned. Under the heading of lifferential diagnosis there are a number of tables of symptoms, two to four diseases in each, showing comparative points of differentiation in diseases that are liable to be confounded. These tables will be of value, to a beginner in eye work, as an aid to correct diagnosis. While much stress is placed on internal medication the local treatment has not been neglected. The local measures suggested, both medical and surgical, are of the most approved type and have, in the authors experience, given the best results. The portion devoted to therapeutics is, from the standpoint of the homoeopath, all that could be desired. Apparently, not a remedy having any indications for use in the treatment of eye diseases, has been eliminated. The prescriber, searching for the indicated remedy, cannot fail of finding it among those mentioned.

The book is fairly well arranged and as intended, is well adapted for use by the student and general practitioner. W. W. IRVING.

### Ancient History of Ophthalmology.

HIRSCHBERG, PROF. (Graefe-Saemisch. Handbuch der gesamten Augenhkde. Second edition entirely rewritten, Leipzig, 1899, Wilhelm. The second edition of this admirable and unrivaled work, which will exceed the first by the addition of eleven new chapters is edited by Prof. Saemisch, of Bonn, and 31 prominent collaborators. It will fill 14 volumes and is published in numbers, of which so far 17 have appeared. Numbers 4-9 form the

XI Vol. which is complete containing the "Ancient History of Ophthalmology," by Prof. S. J. Hirschberg, of Berlin. Subscription price, M. 10.80, $2.70; bound in leather M. 13.80, $3.45.)

The only work we had on the history of ophthalmology was A. Hirsch's monograph in the first edition of Graefe-Saemisch. But this was not written by an ophthalmologist and therefore Vol. XII of the second edition will be especially welcome, as it contains the ancient history of ophthalmology by no one less than Prof. Hirschberg, of Berlin. On account of his wonderful knowledge of the classic languages, unusual for a physician (among others he has edited a dictionary to Aristophanes), and his studies during his travels in Egypt, Japan and India, he was especially well qualified to perform the task, of giving "a photographic, as it were, true picture of the different stages of development in ophthalmology by presenting the principal original texts to the reader." Opposite the Greek sentences we find the author's own translation.

The study of the ophthalmology of the ancient Egyptians was possible after the discovery by George Ebers in 1872 in Thebes, the City of the Dead, of their chief medical work, a papyrus. This was written about 1550 before Christ and shows the names of about 30 diseases and a collection of prescriptions. They knew Trachoma and treated it with verdigris. Their knowledge of anatomy, physiology and pathology was very moderate, but their healing art not unimportant. Numerous fairly effective remedies came from the Egyptians to the Greeks and Romans and are used to the present time.

The curious history of medicine of the ancient East-Indians can only be understood from the history of their civilization, which Hirschberg describes in his book, "Around the World," Leipzig, 1894. Besides superstition, which will be found in all ancient systems, the East-Indian medicine was characterized by sharp observation, correct modes of treatment and good operations. The ancient East-Indians probably invented the operation on cataract by reclination, certainly the plastic operations and the magnet operation. as described in the Ayur-Veda, of Sucruta. While in India, Hirschberg saw a number of people who had been successfully operated upon by reclination by cataract quacks. Under the glowing sun of India senile cataracts mature 20 years earlier than in Berlin; the average there is 42, here 62. The dangers of reclination at 40 years are less than at a later age, therefore, it must be acknowledged that in India, for centuries, perhaps millennia, innumerable people regained their sight through reclination performed by workingmen.

In China ophthalmology is very poorly developed, whereas in Japan, since it came under European influence, it made rapid progress, as Hirschberg learned from his own observation.

The principal portion of the work is devoted to the ophthalmology of the ancient Greeks. The first period is from Ancient Time up to Hippocrates, the second is the Alexandrian-Roman epoch, and the third is the late Hellenistic and Byzantine time.

Conjurations formed the beginning of the healing act. The miraculous Eye-Cures of Asclepios of Epidaurus, inscribed on marmor plates from the third century B. C., which were exhumed in 1883, are given in the original Greek with translation.

The works of Hippocrates contained comparatively little of ophthalmology. The knowledge of anatomy and physiology of the eye was superficial, as it was only gained from inspection of living eyes. The dissection of the eyes of animals is at least mentioned. The pupil has a special name, which means "girl," similar to those in other languages, which refers to the small image reflected from the cornea. The pathology of the eye was very indefinite, humoral. Endemic and epidemic ophthalmia were well known but not blenorrhoea neonatorum, and were treated with venesection, baths and moist applications. Great stress was laid on dietetics. Diseases of the lids, lachrymal apparatus, cornea and iris are described, and glaucosis explained as cataract; but nothing was known of the curability of the latter. The nervous affections of the visual organ, amaurosis, amblyopia, hemianopsia, nyctalopia, photopsia, muscae volitantes, ocular vertigo, scotoma scintillans, strabismus, paralysis and spasms were known. Anomalies of refraction are not spoken of. Nystagmus was called "hippos." Hippocrates thought these symptoms had rather a prognostic than diagnostic value. The surgical writings of Hippocrates still claim our admiration, but they contain nothing on eye operations, His immediate followers, the Hippocratians, mention four eye operations, which are still performed: ophthalmoxysis, excision of trachomatous conjunctiva, evacuation of pus from the anterior chamber and operation for trichiasis.

The second period shows remarkable progress, owing to the development of the exact sciences by the Alexandrian school—the Greeks in Egypt, at the time of the Roman Empire. Although no Alexandrian works are preserved, their ideas were propagated by their successors. so that it is possible to follow out the study of ancient Grecian optics from Euclides, Heron, Ptolemaeus and Damianus. The laws of catoptrics and the phenomena of dioptrics were familiar to them, but not the mathematical formulation of the latter. Point of fixation, field of vision, and diplopia were understood, but not the mechanism of vision as produced by the dioptric apparatus of the eye. Spectacles were not known to the ancient Greeks and Romans. They observed the burning properties of glass globes filled with water when exposed to the sun, and their magnifying powers, but attributed them to the water instead of to the spherical curvatures. They were not acquainted with color blindness.

Their anatomy of the eye gained a much greater importance in the history of civilization than their optics. Hirschberg reproduces it from the works of Rufus (who lived in the first century), and Galenus, and shows that the conception of the anatomy of the eye of the latter prevailed up to the eighteenth century, and that the nomenclature adopted by the anatomical society (1895) is based upon it.

A chapter on ocular remedies follows from the study of Dioscorides. He is the first to speak upon surgical anesthesia, produced by the plant Mandragora. A historical explanation of the term collyrium is given, showing that it originally signified suppository.

The history of the clinical ophthalmology of the ancients, commences with an abstract of the oldest Graeco-Roman work extant, by A. Cornelius Celsus (25 B. C. to 50 A. D.), which is a systematic treatise on thirty eye diseases. The chapter on eye operations, of which Celsus describes 21, is very interesting; some of them are still practiced. He is the first one to give the pathology of cataract and teaches the operation of reclination, which requires that the cataract be mature. The plastic operations by quadrangular sliding flaps were devised by Celsus.

Here follows a glance at the condition of the medical profession, particularly the oculists, at that time, and a chapter on specialism and general medicine. With the exception of Celsus, the works of the other Roman authors on medicine are of minor importance; Scribonius Largus, Priscianus, Cassius Felix, Marcellus. Plinius Secundus (23 A. D.) speak of palliative cure of "squama," which does not mean cataract, but leucoma, according to explanations found by H. in Tobias, Marcellus and Galenus, and mentions mydriasis by Sucus Anagallidis and the healing properties of water from warm spas for diseased eyes. The book of Quintus Serenus is a collection of recipes in verses, characterizing the superstitious popular medicine of the contemporaneous Romans.

The most eminent Greek author on ophthalmology, after Hippocrates is Claudius Galenus (131 A. D.) of Pergamos whose influence outlived that of the former. From 164 A. D. he lived in Rome and was celebrated as a physician, teacher and author. 83 authentic papers of Galen are preserved, but not his ophthalmological works. His views on eye diseases must be gathered from the elaborate ophthalmological discourses in his books on pathology. His descriptions of paralysis of sensation (optic nerve) and of motility (diplopia), are excellent. Phantasmata are attributed to diseases of the brain. The crystalline lens is considered as the chief organ of sensation. The perception comes from the brain by way of the optic nerve. All other parts of the eyeball are only accessory. The pupil may be altered by enlargement, miosis, distraction and rupture, Hypopyon and hypochyma (cataract) are clearly distinguished by their specific gravity and treatment, as the one lies in the pupil, the other is in front of and below. From the works of Galenus it follows undoubtedly that the ancient Greeks practiced one form of cataract operation, viz., reclination, and that some surgeons had attempted extraction by incision, but who did it or how it was done or under what circumstances, is not mentioned. If the cataract consists of a milky fluid and be punctured it sinks down like a sediment. This shows that they also practiced, unintentionally, a kind of discission. Galenus was cognizant of the ocular tension, but not of the clinical picture of glaucoma. The glaucoma of the ancient Greeks we would call "complicated cataract with amaurosis."

As to the knowledge of the ancient Greeks and Romans on visual disturbances, H. says that the anomalies of refraction and accommodation were unknown.

Only 5 ancient monographs on ophthalmology are known, of which none are preserved, and none were written by an oculist. The progress of ophthalmology in antiquity was accomplished by eminent generally educated physicians. Only two monographs on ophthalmology exist from an undefinable later period which bear the names of Greek physicians: "Galeni liber de oculis," which is a compilation from abstracts and translations from books by Galenus by Arabian authors, and the so-called "Ophthalmology of Alexander of Tralles, the authenticity of which is refuted by Hirschberg.

After dealing with the synopsis, abstracts, monographs and textbooks of ophthalmology by the late-Hellenistic and Byzantine authors (Oribasius, born 325; Aeitius of Amida, 540, Paullus of Aegina, 550, Alexander of Tralles, 525, Leo, 829, Theophanes Nonnus in the tenth and Joannes Aktuaris in the 14th centuries) who all, in blind admiration of antiquity, use the same nomenclature and descriptions of disease, H. presents a Greek canon of ophthalmology, according to Paullus of Aegina, with translation. The works of the latter are written in such a form that they might form a model for a text-book even today. A few quotations from Hippocrates, Galenus and Celsus with regard to the knowledge of asepsis by the ancient Greeks are added. H. closes with the remark that in all these 2000 years the discoveries and inventions in ophthalmology, particularly operative, were very few since the time it had been created in a complete form, like Athene from the head of Zeus, by the systematic labors of the Alexandrian Greeks. It received a new stimulus through the study of the Greek authors.

The great pleasure and interest which the perusal of this elaborate work of Hirschberg afforded the reviewer will be shared by any one who wishes to know how the present came to be what it is.

C. Zimmermann.

### Hygiene of the Eye.

FICK, DR. A. E. of Zürich. (Graefe-Saemisch Handbuch der gesamten Augenhkde., 2nd Edition, Chapter XIX. Nos. 11 to 14, Leipzig, 1899, W. Engelmann. Subscription price each number, 2 Mk., 50c.)

This is an entirely new chapter of the great encyclopedia, as the first edition contained nothing on hygiene of the eye, a comparatively recent branch of ophthalmology. The chief part of the 184 pages is devoted to the dangers threatening the eyes by glaring light and near work, and the rest to the effects of poisons, contagions and general diseases, on the visual organ.

The action of diffuse glaring light on the eye is analyzed in the various clinical pictures of snowblindness, electric ophthalmia, irritation by lightning and insolation. In the explanation of these phenomena Fick follows the recent experiments of Wildmark who proved that they are due to the action of the ultraviolet rays. A solution of alum, the aqueous and vitreous humors absorb the ultra red rays, the thicker strata of the air, glass and the crystalline lens absorb the ultra violet rays. By sieving mixed light according to this principle it may be ascertained, that the visible rays alone irritate the iris, but not cornea and conjunctiva; ultra red rays cause a transient irritation, the ultra violet a violent irritation of these tunics. Therefore, snowblindness is only observed in higher altitudes, owing to the greater amount of ultra violet rays of the thinner atmosphere in high mountains. The cataract caused by lightning may be due to the action of the ultra violet rays or, according to Hess, to the destruction of the epithelium of the lens with subsequent disturbances of nutrition of the latter.

Hemeralopia (not congenital and without ophthalmoscopic changes) is, according to the investigations of von Kries, described as a disease of the rods of the retina and due to the morbid incapability (as caused by malnutrition) of the pigment epithelium of regenerating the expended visual purple.

The effect of glaring from direct sun light, as it occurs by observation of eclipses with the naked eye, is brought about by the visible rays and consists in a combustion of the retina with subsequent scotoma. Even through the closed lids direct sun light may damage the retina, especially in infants, and the author thinks it not to be impossible that an amblyopia without ophthalmoscopic changes in later years may have its origin from such a glaring in early childhood.

In the paragraph on artificial light, the dangers of the latter are set forth, also the dependence of visual perception on the intensity of light according to the investigations of Uhthoff and Cohn, photometry and a description of L. Weber's photometer with figure, the advantages and drawbacks of kerosene oil, gas, Auer's (Welsbach's) light, incandescent alcohol, acetylene and electric light.

In the chapter on the causes of myopia, the author follows the investigations of Cohn and Seggel as to the influence of continued near work. The pressure of the ocular muscles, the influence of convergence and accommodation alone are not sufficient to produce myopia, it requires the additional effect of hyperemia due to continued close work. A predisposition to myopia may be established from the formation of the skull (Mannhardt, Stilling, opposed by Schmidt-Rimpler and Weiss), the thickness of the sclerotic, the condition of the ciliary muscle and the length of the optic nerve (Weiss). The author, however, enjoins prophylactic measures not only for individuals with these anatomical predispositions but for all young persons. After laying down general rules, he discusses in detail the requirements of school hygiene in regard to seating, lighting and material with illustrations, criticizes what is faulty in the education of the German gymnasiums, and advocates the appointment of school physicians.

Intoxications:—In Europe alcohol plays the principal part of all poisons. F. sees the chief cause in the compulsory social customs as to drinking which should be first combatted. The amblyopia ex abusu spirituorum, the affections of other ocular nerves and the conjunctiva due to alcohol, and tobacco-amblyopia are discussed, then follow the intoxications by hashish. opium, morphin, arsenic, sulpho-carbonic, nitrobenzol, aniline and the polymorphous action of lead on the eye; as amblyopia without visible changes, peripheral retrobulbar neuritis with central scotoma, marked optic neuritis with considerable swelling of the optic disk and hemorrhages, retinitis presenting the ophthalmoscopic picture of albuminuric retinitis (Leber) and direct optic atrophy without preceeding neuritis. Ingestion of decomposed meat, cheese and preserves may produce poisoning by ptomaines affecting the sight and the ocular nerves, particularly accommodation.

Touching upon the contagious diseases of the eye, the author advocates for the prevention of blennorrhoea neonatorum the obligatory introduction of Crede's method in institutions, in private families written instructions for the parents and midwives. For the cure and prevention of trachoma he endorses Hirschberg's suggestions to erect eye clinics in countries where trachoma exists as an endemic disease and, to avoid propagation by laborers immigrating into other provinces, the rule ought to be made that none of these be accepted for work who has not a medical certificate showing that he is not trachomatous. Of general diseases F. passes in review the ocular affections in tuberculosis, scrofulosis, syphilis, variola, measles and the means of their prevention.

In an appendix on quackery the author speaks of prejudices and wrong measures of laymen which are apt to aggravate eye affections; as cold applications when not indicated, earrings, the employment of eye stones, the reluctance against the use of spectacles and the indiscriminately shutting up of patients in the dark room.

The whole monograph is very instructive for the student and the general practitioner as well as the eye specialist, giving full information on these topics for which they will search in vain in the text-books.

C. ZIMMERMANN.

### Blindness.

FICK, Dr. A. E. (Graefe-Saemisch Handbuch der gesamten Augenhkde., 2nd Edition, Chapter XX, 20 pages of No. 14). This is also entirely new and well written. (Price of No. 14.2 Mk., 50c.)

After defining the subject as "incurable" blindness and describing the condition of those aflicted with it, the author quotes statistics on its frequency. The results of the latter are not correct according to the principle so far adopted, viz., to enumerate real morbid causes and mere anatomical conditions promiscuously as causes of blindness. In his opinion the statistics of the causes of blindness ought to be investigated anew and arranged in the following order:—

1. Congenital blindness.
2. Blennorrhoea of the new born and adults.
3. Trachoma.
4. Diphtheria.
5. Myopia.
6. Glaucoma.
7. Neoplasms.
8. Injuries including failures of operations and sympathetic ophthalmia.
9. Intoxications (tobacco, alcohol).
10. Variola.

11. (a) Measles. (b) Scarlet fever. (c) Typhoid. (d) Puerperal fever.
12. Syphilis.
13. Tuberculosis and scrofulosis,
14. Unknown causes: (a) in well known eye diseases. (b) in unknown eye diseases.

On the prevention and cure of syphilis, the author lays especial stress, as it is of much greater etiological importance than it might be surmised from existing statistics. Syphilis is probably the cause of many cases of blindness which appear in statistics as affections of the cornea and uvea, congenital blindness and other groups of unknown origin.

The number of blind depend on the prosperity and civilization of a people, on hygienic institutions and the education and number of oculists and general physicians. About two fifths of the cases of blindness can be prevented.

In conclusion F. speaks of the care taken of the blind. It is best in those countries which by law compel the blind children to be sent to school, as in Saxony, Vienna, Brunswick. Norway and Bern.

As to every chapter of this excellent work, also here a bibliography is added. C. ZIMMERMANN.

## Contributions to the Onkology of the Eye.

VON MICHEL, PROF. DR. J. (Reprint from the jubilee number of the Transactions of the Physical and Medical Society of Würzburg, 1899, with 9 figures on two plates. Würzburg, A. Stuber's Verlag, (C. Kabitzsch) 1899. 2 Mk., 50c.

Tumors of the eye furnish instructive and valuable material for the study of general onkology as to the place of origin and propagation, since a great variety of tissues are represented in this small organ which is commonly subjected early to operative treatment. M. reports the clinical histories and anatomo-pathological examinations of four cases of eye tumors with espcial regard to the subject of tumor dissemination. 1. Melanosarcoma of the conjunctiva. 2. Epibulbar alveolar sarcoma. 3. Epibulbar round-celled sarcoma. 4. Embolic metastatic carcinoma of the choroid.

Case 1. Gradual dissemination of a melanosarcoma over the whole conjunctiva from one point; growth by infiltration, which involved the epithelia even on the lacrimal canaliculi with pigment. Very likely a free growth of the tumor elements occurred on the conjunctival surface by detached tumor cells entering the crypts of the conjunctiva and remaining more readily in places devoid of epithelium.

Case II. Without any contiguity, a small sarcomatous nodule developed in the epithelium of the cornea, apparently from tumor elements invading the epithelium and thriving in it, after a lesion of the cornea had taken place. This represents inoculation of tumor cells into the epithelium of the cornea with further free growth.

Case III. M. supposes that cells of a round-celled sarcoma of the iris and ciliary body coming into the aqueous humor, reaching the endothelium of Descemet's membrane, found a favorable soil for diffused growth, in a similar fashion to that found by Beneke in the peritoneal cavity.

Case IV. Embolic metastatic carcinoma of the choroid produced free epithelial metastasis between two ciliary processes of the opposite half, in a niche between the pars ciliaris and the pigment layer. Undoubtedly particles of the choroidal tumor must have broken loose, landing in the niche between the two ciliary processes where they continued to grow. The latter were especially prepared for the reception of cells, as their epithelium was more or less degenerated and cystoid, from considerable disturbance of circulation in the ciliary vascular system (hemorrhages of the choroid, rise of intraocular tension). With this, there are 25 cases of metastatic carcinoma of the choroid so far published, to which M. refers.

He sums up his general conclusions: 1. In tumors of the eye, free growth of metastatic elements may take place. 2. The mode of growing corresponds to the character of the tumor, viz., carcinoma developes in strata, sarcoma varies according to the structure of the invaded tissue; it forms even without any contiguity and then leads to generation of more liquid tissue, as in the exudations of the pleura and peritoneum. C. ZIMMERMANN.

## The Structure of the Optic Chiasma, with a General Theory of the Crossing of the Nerve Fibres.

S. RAMON Y CAJAL. (Translated into German from the Spanish by Dr. J. Bresler, Leipzig, Ambrosius Barth, 1899. 66 pages, 3 Mk., 75c).

Since the classical anatomo-pathological investigations of Gudden, Ganser, Tartuferi, Singer and Münzer, Henschen, Monakow and others the question as to the constitution of the chiasma seemed to be conclusively settled. They showed that each optic tract contained direct (homolateral) and crossed optic fibers, pupillary and centrifugal fibers. Koelliker and Michel however, from anatomical studies of normal preparations (stained according to Weigert-Pal) in serial sections, negative the existence of direct or homolateral optic fibers. ((In his latest work published Koelliker acknowledges the partial crossing. Reviewer).

This strange discrepancy of opinions lead Ramon y Cajal to show that the methods of Koelliker and Michel were faulty because the optic fibers, which take a varied and curved course in different planes will be mutilated in thin sections, whereas the methods of Golgi and Ehrlich allow examination of thick sections, in which each medullary fiber may be followed over large areas. By this method the celebrated author studied fundamentally the optic decussation in different classes of vertebrates, finding total crossing in the fish, bactrachians and birds. In rodents (mouse, rabbit,) methylene blue or chromic silver do not show any direct fibers, but the method of Marchi (degeneration after extirpation of one eye) shows fatty degenerated direct fibers (rat, guinea pig, rabbit) extending over the whole width of the optic tract, emerging from the outer, middle and inner strata of the optic nerve, which may be seen as far as the corpus geniculatum and pulvinar.

In the cat the homolateral fibers are very numerous, almost one third, and are easy to demonstrate with Golgi's, Ehrlich's and Marchi's methods. They occupy the anterior and outer portions of the tractus near the chiasma, but further away they spread equally over the whole extent of the tractus, coming from all planes of the homolateral nerve. Therefore, the author thinks it probable that in the center of the tractus and in the corpus geniculatum externum and pulvinar the direct and crossed fibers emanating from identical points of both retinae run together as isodynamic conductors. In the Marchi-preparations of the cat, R. could trace both fascicles to the corp. genic. ex., pulvinar and ant. corp. quad., and had the impression that the direct and crossed fibers spread into the same area.

As a perfectly new discovery he found in both regions of the chiasma of the rabbit, but mostly in the anterior half, bifurcations of fibers coming from the retina, one proceeding to the homolateral, the other to the opposite tractus. These might explain the bilateral degenerations after extirpation of one eye in the rabbit. The number of bifurcated fibers is, however, too small in comparison to those found with Marchi's method in the homolateral tractus and R. inclines to the assumption that also in the rabbit, direct, not bifurcated, fibers exist. In the cat, dog, monkey and man the direct or homolateral fascicle amounts to more than one third of the decussating fibers.

From the study of the chiasma of fetal or new born mice and cats, in which R. found all transitory stages of epithelial and neuroglia cells, he infers the intracerebral formation of the chiasma, i. e., histogenetically it developes from the infundibulum and the floor of the third ventricle.

In the second part the author expresses his general thoughts on the sensory and motor decussations. He considers the partial decussation of the higher animals as a later phase of evolution than the total, and the latter as subsequent to the formation of an encephalon. In animals without sensory centralization (amphioxus, vermes), the homolateral paths predominate. R. sees the difficulty in the problem of explaining the benefit of sensory decussations, particularly the optic, which probably preceded all others. In analysing (with schematic drawings), the optic paths of the lower vertebrates, he refers to the fact that animals with mosaic eyes (insects and crustacea), have no optic decussations. Their mental image (the sum of the bilateral optic impressions), will be panoramic, i. e., corresponding to the objects which occupy different places in space, continuous and localized in that side of the cerebroid ganglion which corresponds to the outer objects. Crossing of the optic nerves would be disadvantageous, as it would produce lateral inversion of the halves of the central optical impressions.

Eyes with panoramic vision provided with a lens, require a crossing of the optic nerves to rectify the inversion of the retinal image produced by the lens. In the lower vertebrates each eye conducts its impressions of the objects to the brain, and, on account of the crossing, the left side of space to the right half of the sensory cortex and vice versa. The mental image is always uniform and consists of the continuous juxtaposition of both sensory projections, so that the brain is a kind of mental retina, the sum of both retinaè, distributed over two symmetrical monolateral surfaces. There is no functional duplicity in the brain;—the symmetrical points of each lobulus opticus (the optical centre of the lower vertebrates) correspond to different points in space.

The vision of the higher mammals (cat, dog, monkey, man) is characterized by the common visual field of both eyes, produced by the parallelism of the visual axes, with anatomo-physiological development of the direct fibres. This apparent restriction of the visual field in comparison with the panoramic field of the lower vertebrates is made up by the advantages of stereoscopic vision, which is brought about by successive projections, in consequence of alternating convergence of the visual axes, of different planes of the object on identical points of both retinae. The duplicity of sensation which might be inferred from a common visual field is obviated by the termination of the homolateral and crossed fibers (corresponding to identical points of both retinae and conveying the same portions of the image) in the same group of pyramidal cells. Some mammals (horse, cattle, goat, donkey, etc.) have a mixed visual field, viz,, the larger portion is panoramic, the smaller stereoscopic. Even in man the peripheral inner portions of the retina have no identical points, they have panoramic vision which explains the lacking of the perception of relief in these parts and also the predominance of the crossed fibers.

From the decussation of the optic fibers R. explains the crossing of the motor paths as a natural consequence, in as much as the motor reaction had to be conducted to the side of the sensory irritation, and also the crossing of the sensative, tactile, muscular, acoustic, and olfactory fibers.

Finally R. devotes a chapter to a new hypothesis on the functions of the corpus callosum in concordance with Fleschig's theory of the existence of sensory, motor, association and projection centers. A preface by Fleschig precedes this attractively written work.

C. ZIMMERMANN.

## The Injuries of the Visual Organ by Lime and Similar Substances.

ANDREAE, DR. JULIUS. (8mo., VIII, 178 pp., Leipzig, 1899. W. Engelmann. 5 Mk., $1.25.)

In this interesting monograph A. gives the results of two year's studies with the material of the Bonn eye clinic, under the auspices of Prof. Saemisch, and his experiments on the action of lime on living rabbits' and dead pigs' eyes with a critical review of literature. He soon found that the general views on the nature of injuries by lime, their consequences and the therapeutic measures are quite erroneous, which he attributes to the fact, that so far the authors did not pay sufficient attention to the chemical difference between the various combinations of calcium. His aim, therefore, is to rectify these faulty conceptions by a critical investigation with particular consideration of the chemical conditions.

In the introduction he gives a general review of the injuries of the eye, emphasizing the distinction between burns from thermal action (kausomata) and cauterization by chemical agents, because the process of mortification produced by the former is entirely different from the latter. Of the various chemical subtances discovered, we here only mention formalin or formaldehyde, which is used in 40% solution as formol, is very dangerous not only to the respiratory tract as gas or in water solutions, but also to the eyes; two cases are reported with severe damage to the eyes by that substance.

As to the preservation of the globe and its functions, injuries by chemicals give the most unfavorable prognosis, and foremost among these are the cauterizations by lime. Chapter one treats of the chemical properties of calcium and its combinations as to their dangerous actions on the eye, i. e., with regard to their solubility, their reaction to water in general and the changes of temperature dependent upon it and their chemical affinity to some inorganic and organic substances which here are of importance. Most derivatives of calcium are soluble in water and these are dangerous; the insoluble are not, viz., the carbonate, the secondary and tertiary phosphates, the silicate and fluor-calcium. To the latter also belongs plaster of Paris, although soluble in water only 1:400.

Calcium carbide, ($Ca\ C_2$) recently and extensively used in the manufacture of acetylene gas ($C_2\ H_2$). If brought in water it is decomposed into acetylene-gas and hydrate of calcium, and if this is done suddenly the temperature rises to about 500° C, so that an explosion occurs.

Oxide of calcium or unslaked lime, obtained by burning phosphate of lime is the chief ingredient of mortar. The process of slaking consists in pouring water over oxide of calcium by which it is converted into hydrate of calcium. An instantaneous intense rise of temperature was hitherto generally supposed to be associated with this procedure until A. by systematic experiments ascertained the following facts: four stages have to be discriminated; (a) hygroscopic intussusception of water with rise of temperature from 10° to 15° C. within the first 2—4 minutes. (b) Mechanical absorption of water for several minutes in which the temperature remains stationary. (c) Chemical action. Temperature at first rises slowly and then rapidly. (d) Gradual cooling off.

In A's experiments blood temperature was reached after nine minutes, and it took ten minutes before it rose above 40° C.; the maximum of 82.5° C. occured after 19 minutes, but never exceeded 100° C. The latter may be obtained only in closed vessels so that evaporation is prevented. If, instead of water, acids are used, as hydrochloric, nitric, citric, succinic acids, water charged with carbonic acid, fresh or sour milk, certain solutions of salt and of sugar, the temperature rapidly increases above 100°; with a sugar solution it rose to 121° C.

The admixture of glycerin to oxide of calcium only slowly becomes warm and does not rise as high as that of water. Dilutions of glycerin with water to one half or one fourth of its concentration lowers the maximum of temperature very much. A concentration of one eighth or one sixteenth weakens the action of water within the first ten or twenty minutes but then the temperature rises to 90° C. as in clear water. The maximum of temperature for admixture of water was observed in proportion of 100 grammes oxide of calcium to 60 ccm. of water.

With oil, oxide of calcium forms a thick paste without producing heat if afterwards water be added. But oil does not influence the temperature curve of oxide of calcium while in the process of slaking. Oxide of calcium proves very detrimental to the eye, but not as much as hydrate of calcium, although this is opposed to the general belief.

Hydrate of calcium, $Ca(OH)_2$, slaked lime, is a grayish white powder which, while dry, is not caustic, but is very much so if moistened by water. It is extensively used in the form of mortar and milk of lime. It disolves in water in 1:600 without rise of temperature which only occurs by adding mineral or organic acids, milk, glycerin or solutions of sugar. Milk dissolves more hydrate of calcium than water, and this solution as well as those in glycerin or sugar water are much stronger caustics than the watery solutions. The older the hydrate of calcium, the more dangerous it is; its solution in water is called lime water, (1.7 per mille is the concentrated solution at 15° C: 0.9 % at 100° C.). Thus if only small quantities of oxide or hydrate of calcium strike the moist globe, the profusely discharged tears will immediately develop almost concentrated lime water with very deleterious effects.

Vienna lime, used for polishing, hyperoxide of calcium; chlorated lime, chloride of calcium ($CaCl_2$) sulfite ($CaSO_3$) and bisulfite ($CaH_2(SO_3)_2$) and nitrate of calcium are very injurious to the eye, the phosphate owing to its constituent of phosphorous acid, plaster of Paris only in the combination with 2/3 oxide of calcium used in plastering, cement and hydraulic lime as far as they contain oxide of calcium, and the combinations of hydrate of calcium with sugar, with caseine and with albumen of a hen's egg.

Chapter II treats of the dangers to be feared for the visual organ from the combinations of calcium. Solutions of the calcium salts act temporarily and slightly, that of the pastes rapidly, strongly and lasting for days, the dry preparations less rapidly than the moist. On the moist eyeball the dry preparations soon assume the action of the moist.

Lime affects the eye in the following ways: 1. As foreign body. 2. Physical and chemical alteration of the tissues; (a) caused by hygroscopic absorption of water; (b) by thermal exsiccation and combustion; (c) by chemical loosening of the tissues with destruction of their elements; (d) immigration of calcium into the tissues and precipitation of the original or new formed substances.

Against the common belief A. found that the oxide of calcium in contact with water and with the fluids of the eye does not become so hot as to produce thermal injury of the eye because it does not reach 40° before ten minutes and if this should occur the constant discharge of tears would cool it off. Combustion is the chief feature of the injury, if hydrate of calcium freshly prepared by pouring water over the oxide and stirring it and consequently heated to about 99° C. acts upon the eye in this stage.

Chapter III considers the injuries of the eye by lime and its consequences in clinical and anatomical aspects. Although caused by chemically different substances, the same clinical effects are produced by oxide or hydrate of calcium. With regard to the histologic changes A. follows the descriptions of de Gouvea and Gühmann. The opinion that pain does not originate or is not increased until water is injected into an eye injured by lime is erroneous as A. could prove by his experiments and is due to the faulty conception of "lime being slaked on the eye."

In chapter IV, A. brings out some new points as to the origin and the chemical nature of opacities of the cornea after injuries by lime. From his experiments he reached the conclusion that they are not brought about by infiltration or diffusion of calcium salts, but that the latter destroy the organic structure of the cornea forming new and insoluble combinations with the parenchyma, viz., albuminates of calcium. The rusty ring remaining after injury of the cornea by chips of iron is in A's. opinion very likely an albuminate of iron. It is not impossible that with the carbonic acid contained in the tissues and fluids of the eye, especially the cornea, the albuminate of calcium may gradually be converted into carbonate of calcium, which forms very dense white deposits.

Chapter V. As long as there remains a particle of lime in the eye, the process of cauterization, which commences at once after the injury, will continue. Therefore, the chief point in the treatment is the speedy elimination of the foreign body, and this is best accomplished by profuse irrigation with cold water, which also neutralizes any heat which might have developed from the contact of lime with the tears. The stream must not be too forcible lest pieces of lime be pressed into the tissues. The use of water has been denounced for the last 50 years as will be found in most modern text-books (Noyes, p. 265, recommends the copious use of water. Rev.) and it is a special merit of A. to rehabilitate this simple and effective procedure. He also recommends instillations of oil, but not until the lime is removed, as it does not involve the particles as supposed, so that the surfaces of the particles of lime lying directly upon the cornea are not reached by the oil and thus proceed with their cauterizing action. If water is not sufficient the mechanical removal of lime with pledgets of cotton soaked in oil is in order. Although a solution of sugar will dissolve 60 times more hydrate of calcium than water, it is not to be recommended as it requires a certain concentration which again consumes valuable time and then it acts with a more rapid and intense development of heat, and finally the combination of lime with sugar is very caustic. A. does not employ solutions of glycerin as this is not very well tolerated by the eye. For the same reason diluted acids are to be avoided. Water charged with carbonic acid forms insoluble and innocuous carbonate of lime, but this renders opacities, which may develop, still more opaque. A's. experiments in bringing about neutralization of precipitations of lime particles lodged on the globe, gave no satisfactory results, so, that he is convinced, that the best therapeutic measure is the mechanical cleansing of the conjunctival sac with plenty of water. A. then discusses the treatment of the later stages and the prognosis which is very serious. To the anaesthesia of the cornea he attributes no prognostic value.

The last chapter is devoted to statistics and casuistics, accident insurance and prophylaxis. Finally he sums up the most important results of his investigations in 77 aphoristic sentences with reference to the foregoing pages and adds a bibliography of 315 numbers. To those interested a careful study of the elaborate work is recommended. C. ZIMMERMANN.

## Leprosy of the Eye.

BORTHEN, DR. MED. LYDER. (Augenarzt in Throndjem, Norwegen). Die Lepra des Auges. Klinische Studien. Mit Pathologish-anatomischen Untersuchungen von Dr. H. P. Lie, dirigirendem Arzt des Lepra-Hospitals in Bergen, Norwegen. Mit 17 Textfiguren, 15 Lichtdruck- und 9 Chromolithographischen Tafeln. Leipzig, Verlog von Wilhelm Engelmann, 1899. Large octavo, 195 pages (exclusive of cuts). Price 24 marks. $6.00.

The more one studies the eye, the clearer does it become that it cannot be considered alone, but that its intimate and indissoluble relationship with the body as a whole is that which forms the perfect picture. To be sure, we have a simple conjunctivitis, or a traumatic keratitis, which may be diagnosticated and treated without much reference to the general system. There is trachoma, which seems to localize itself on the ocular conjunctiva, although such a keen clinician as Kuhnt asserts that he has traced the cause into the nasal or even pharyngeal mucous membrane; but an iritis is rheumatic or syphilitic, a retinitis follows some blood taint, a panophthalmitis may be caused by puerperal sepsis, a neuritis may be only a sign of brain tumor. So it is that many a case of affection of the lids, or cornea, or iris, rebellious to all our art of therapeutics, will have its causal relations laid bare if we once discover the element of general infection which is behind the local symptom.

Fortunately for us, in America, Leprosy is but a textbook term, merely stimulating our curiosity about what was a scourge of history, and what is now nearly a controllable (Ashmead) disease. Many of us have never seen a case of leprosy, still fewer have traced its ravages into the tissues of, or about the eye, but that is perhaps the greater reason why we should welcome such a book as Borthen's, not only because it shows how far reaching is the love of scientific investigation, but also because it may make clear to some of us the answer to a pathological problem that has puzzled us before. The value of the work lies in its completeness textually, and in its artistic beauty, and it deserves a careful study by any one who is fortunate enough to possess it.

Dr. Borthen has been ten years on this labor; the university and the government soon encouraged him by financial support, his scientific colleagues (Hansen, Hjort, Hansen-Grut, Leber and Sattler among others) gave him moral aid, and the book was finally finished.

In the clinical division there are four parts, XXVI chapters, 160 pages. The first part (IV chapters) is largely statistical, considering the various proportions of patients attacked by maculo-anesthetic and nodular (tubercular) leprosy, of men or women so attacked, of ages, of eyes in general, of particular tissues in or around the eye, and of the consequences and duration of the disease. It is among these statistics that the diagrams are found. I notice that of all the leprous patients (in the hospitals examined) about 20 per cent. escape infection of the eyes; in about 20 per cent. the adnexae are invaded; while in about 60 per cent. both adnexae and eyeball suffer. The invasion is pari passu with the age of the disease. In examining the particular tissues, Borthen shows that NODULAR leprosy (dermatologists have noticed this also, Crocker) is prone to attack the supercilia first, in fact this may often be considered the "point of predeliction for the initial outbreak;" on the other hand the MACULAR (smooth) leprosy is proven to produce chiefly secondary conditions—paralysis, ectropion etc., in somewhat sharp contrast to the previously mentioned nodular leprosy, which invades the tissues primarily. Moreover, nodular leprosy has a noticeably shorter course than the other.

Men seem more susceptible than women; and in comparing sexes with forms of leprosy (referring to the eye, of course) he concludes that maculo-anesthetic leprosy in women is the mildest, next so in men, then comes the nodular leprosy in women, while this latter in men shows leprosy at its worst.

The second part (to Chap. XII) deals with maculo-anesthetic leprosy as affecting the muscular and other tissues of the eye. The conjunctiva, cornea and iris all receive due attention, but he lays stress on the involvement of the "sphincter" of the eye, and the lagophthalmos resulting from its involvement in 62 per cent. of the cases. Iritis occurs in 36.78 per cent.; keratitis but se ldom as compared with that in nodular leprosy.

The third part (Chap. XIII.) merely touches what we call "mixed infection," for Borthen concludes that as far as the eye is concerned only the two chief forms need be distinguished.

Part Four (to Chap. XXVI.) considers the results of invasion of eye tissues by nodular leprosy. This so generally begins in the eyebrows that it has become a popular tradition. Here the hair falls out very early, the disease runs a more rapid course, all the tissues (except the lens, the retina is not mentioned,) are primarily attacked; the cornea may show a punctate appearance, the prognosis of which is, however, favorable; the iris shows new growths [nodular iritis, "iritis uveenne of Grand Clement) and even the choroid suffers.

Pages 162 to 192 are devoted to the pathologic study of the tissues taken from among the cases observed clinically by Borthen. He deserves credit for his care and industry, and while he proves that although "the lepra bacillus is found in nearly all organs and in the blood. making it a general infectious disease, he shows that the eye is a particularly fertile field for investigation in the subject. The bacillus was found in all eye tissues except the lens and vitreous.

Such is Borthen's book. The statistical evidence, the suggestions for diagnosis and treatment, the hints on the cause of the disease, the general care of the patients, the history of leprosy throughout the world, and the variations in form, are abundant and far reaching. A good bibliography concerning leprosy of the eye is appended.

I wish I could give some idea of the beauty of the photogravures and colored plates. There are thirty of the former, fifty-eight of the latter, with three colored plates of microscopical findings. The photographs stand out so clear and sharp that one almost sees the patient in all his unfortunate hideousness. The colored plates are admirable. I know of nothing, except perhaps Frost's Atlas of External Diseases of the Eye, to which they may be compared. All the stages of leprous invasion of conjunctival, corneal or iritic tissue are exhibited, and some of the more pronounced manifestations of nodular growth are so real as to simulate the clinic itself.

Borthen has made no attempt to be either contraversial or dogmatic, and for this very reason the didactic lessons carry so much the more weight. It is a work of investigation, carried on with a love for science that will surely meet reward in the approbation of all interested in general and special medicine. To me it is a scientific treasure, but I can well imagine what a practical storehouse it must be for one whose experiences bring him face to face with the dire results of leprosy.

Due credit must be given to the publisher, Wilhelm Engelmann, for the skill and evident co-operation with the author in the perfection of letter press and engraving. I have never seen the original of the clinical cases, but I feel sure that the artistic work has been performed with all the faithfulness one could ask of a publisher.

A. B. Hale.

THE ANNALS
OF
OPHTHALMOLOGY.

VOL. IX. JULY, 1900. No. 3.

# PTERYGIA: PATHOLOGY AND TREATMENT.

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## PATHOLOGY.

In order to indicate the scope and purport of this contribution we begin with the enumeration of certain assertions which, in reality, constitute the deductions from the observations contained in the body of the essay.

I. The head of a pterygium, though the most dreaded part on account of its possible encroachment upon the pupil, is, genetically, an *accidental* and *secondary* occurrence.

II. The origin and development of pterygia is to be sought in chronic conjunctival inflammation causing loss of conjunctional elasticity and, eventually, shrinkage.

III. Pterygial degeneration having begun in the conjunctiva, a head is formed on the cornea on account of the kerato-scleral angle (q. v. infra) which during extreme lateral excursions favors detachment of the lamina vitrosa anterior and its epithelium.

IV. The head ceases growing at or near the center of the cornea, because the kerato-scleral angle is there effaced.

By way of recapitulation we mention that all epithelium bearing membranes consist of a basement membrane (tunica propria) and the epithelial cells. The conjunctiva is of the mucous type and lines the inner surfaces of the lids and all of the visible front of the eye. Over the cornea, the bulbar reflection differs from the rest by three essentials, i. e.:

a. Transparency.
b. Fixity.
c. Inelasticity.

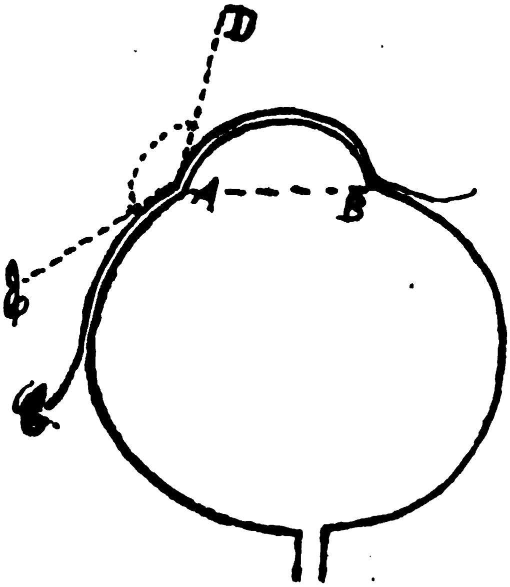
Owing to these modifications the basement membrane has been called *lamina elastica (vitrosa) anterior;* its epithelium, corneal. In spite of all this it should be remembered that, genetically and by direct continuity, this lining is merely conjunctiva.

The elasticity of the bulbar conjunctiva is marvelous. Observe an eye-ball turned outward as far as the rectus externus will carry it, and you will see the conjunctiva covering virtually two-thirds of the palpebral fissure. Then adduct to maximum and the whole extent of this surface is apparently gone, and that without a wrinkle. In up and down displacements this seems more easily understood on account of the plicate redundancy of membrane in the culdesacs, but externally and internally it is thoroughly fixed at the commissures. It is this *difference* that helps to make pterygia most frequent in the fissural plane, for even with the same amount of inflammatory "starching" the upper and lower parts will not form a head till all fornix folds are exhausted.

The vast elasticity of healthy conjunctiva is furthermore shown by its rubber-like readiness to stretch when picked up for an incision (strabotomy, etc.) and by its retractile shrinking after incision. A linear conjunctival incision immediately spreads out into a large roundish opening. As a matter of contrast I ask my readers to pick up the conjunctiva forming the body of a pterygium. Will it stretch? More or less—usually less, and often hardly at all. I also ask them to pull away from the ball a lid affected with chronic trachoma: will the conjunctiva stretch? No; it will double up in folds, recede from the globe and so shorten the route of connection.

The *structure* of a pterygium microscopically:

The *head* consists of a circumscribed detachment of the lamina vitrosa and its superincumbent epithelium. The lamina is thickened, its homogeneity having given way to a fibrillary make up, which latter is connected with a number of fibrous trabeculæ running to the corneal parenchyma. The epithelium is nearly doubled in strata, the number of the latter diminishing toward the end of the head. However, this thinning down is not complete where the detachment ends, but runs a little beyond the line. This shows that the first reaction occurs in form of epithelial hypertrophy and keratosis (Verhornung).



Clinical observation easily verifies this in all but very small heads. If, after dissecting up the body, the latter be grasped with an iris-forceps and held tensely forward, we can easily push a small spatula under the head. In large specimens this could not escape the most unobserving. When detached correctly the outline of the former pterygial attachment always resembles more or less the figure of a horse-shoe. Of course, in small specimens this demonstration is not always easy, yet the use of a good loup will aid wonderfully.

The *body* shows:

(a) Increased vascularity.

(b) Thickening and fibrous degeneration of the tunica propria.

(c) Increase of the submucous connective tissue and of its vascularity.

(d) Heaping and irregularitie of epithelium, especially about folds.

These appearances all indicate a very low grade of inflammation with the gradual organization of the plastic exudates, and nothing would more surely interfere with membranous elasticity.

However, all these conditions could not result in the formation of a head, if it were not for the presence of the kerato-scleral angle.

Owing to the implantation upon the eye-ball of the smaller corneal sphere, there arises the kerato-scleral angle which, in the drawing, has been given the measure of the linear angle D. A. E.

Now, force can be fully conveyed in a straight line, but any angle would at once create a new point of application at A. tending to obliterate the angle D A E, which would mean detachment at point A. Still, the lamina vitrosa anterior being cemented to the corneal parenchyma and this attachment being kept at a uniform point of strength by processes of nutrition, it easily withstands the most extreme tension of a *healthy* conjunctiva, but when the latter loses its normal stretching quality the increased pull gradually crowds the zone of transition back upon the cornea.

We can very nicely represent to our mind this process by a finger nail. Where the skin joins the nail in front and underneath we have the "line of transition" between the normal epidermal cells and those modified into nail. By gentle pressure with a finger-spatula we can crowd this line back $^1/_{16}$ inch in less than a day. That detachment of this kind is easily accomplished with the anterior corneal lining is often seen in peritomies when, on picking up a little remnant flap, small traction leads to this result. The detached portion always assumes a milky haze. Of course, such acute and violent separation is followed by healing in the ordinary way. *It is the small and continual traction that produces lasting results.*

The first effect on the *lamina vitrosa anterior* is, as already stated, fibrous thickening, but simultaneously the epithelium undergoes callous hypertrophy, such as we observe in the horny fist of a laborer. If the cement is unusually resisting, the head will, perhaps, make slow progress in a pupillary direction and the teasing stretch may even reflect the epithelial changes slightly upon the conjunctiva in the direction of the canthus.

While all chronic inflammations injure the conjunctiva, its elasticity is most disturbed by everlasting irritation of the lowest possible type, i. e., chronic conjunctival hyperemia (the dry conjunctival catarrh of our forefathers) due chiefly to avoidable mechanical causes, such as drifting sand, dust of stone or flour, excessive smoke, irritant fumes, etc.

Let us take the common example of a young farmer going into the sandy and windy parts of western Kansas or Nebraska. His eyes become irritated and suffused and assume the appearance noticed after continued debauchery in town life. If at this stage the irritation cease, all would right itself, but indifference and ignorance produce a different issue. With the persistence of the cause the congestion leads to chronic plastic organization. Yet even with a small head regression is still possible, as with the cessation of the cause a wonderful amount of atrophy of the newly formed tissue may occur, although always very gradually indeed.

The most dangerous and progressive form is the vascular (P. crassum). The submucous cellular tissue is enormously proliferated and within it spring up innumerable bloodvessels of new formation. This vascular network looks like a dense red carpet, after resection of the conjunctiva. The latter is thoroughly adherent to the subjacent tissue which, in its turn, is tied down intimately to the sclerotic. This vascular sheet most always exceeds the limits of the pterygial body.

Cicatricical shrinkage is the inevitable consequence of these conditions, even to the point of squinting and diplopia, although the latter is rare.

Mechanical particles not favoring any particular part, why should the vast majority of pterygia occupy the inside?

Foreign bodies, no doubt, do reach all parts of the palpebral fissure equally readily, but they do not stay there.

The action of the tears and lids is to lodge them finally in the nasal angle, hence the inner part not only has to take care of its own share, but also of that of the outer half, besides being taxed with all sorts of excursionary movements on the part of the offending particles till they are finally thrown out at the inner canthus.

The causal relation of pericorneal abrasions and ulcers is contradicted by all of my experience. Pingueculæ have some relation to a pterygium, but not a direct causal one. A pinguecula is an epithelial hypertrophy, very much like the head of a pterygium. It is brought on by the same agencies that produce pterygial degeneration of the conjunctiva. Callous aggregation in patches is observed frequently in sections, but it does not always reach the size of a full fledged pinguecula. The latter may be round, oblong, and even multiple, *but even in any case they are simply callous hypertrophies of epithelium.* They have often been referred to as fatty tumors (and Jackson even mentions this in his recent text-book), but chiefly on account of their yellowish appearance. However, when pavement epithelium becomes hypertrophied and callous, a yellow tinge is natural to it (skin on sole of foot, over corns, etc.).

Their very presence indicates that causes are active favoring the formation of a pterygium and they add to the process by preventing the upper lid to have a full cleansing sweep over the eyeball. The dust settles, to some extent, around the base of the little elevation, whence it defies the action of the lid and keeps up mechanical irritation. It, therefore, may hasten the detachment of a corneal head, but not as an independent factor.

The palpebral fissure being the widest at the center, why should a pterygium be narrowest near the cornea?

The sweep of the lids will collect all foreign particles in the line where the free margins meet. It is true, they may scatter again with the opening movement, but the next closure will re-collect them till they scatter in the inner angle. This tends to tax the central line the most and it is here, too, that pterygial degeneration is most marked. But the more powerful reason is to be looked for in the meridional arrangement of all tissues. Bloodvessels, lymphatics and nerves all course that way, hence any degenerative change limited to a part of the conjunctiva would narrow, with this part, toward the pole and widen out toward the equator.

Scars of conjunctival ulcers would, no doubt, interfere to a certain degree with the elasticity of the membrane and, by wrinkling the latter, favor local irritation. This would entitle them to consideration as a cause co-operative, but not provocative.

### TREATMENT.

We counsel the removal of *all* pterygia.

Our reasons:

1. A pterygium may become nonprogressive and, with the removal of the cause, even atrophic, but such cases are great rarities. It is the extraordinary chronicity and consequent slow development that leads us to believe in arrested growth.

2. Although a pterygium may be removed any time, it must be remembered that the detached head invariably leaves a corneal cicatrix. The latter may not be apparent on ordinary inspection, but focal light will reveal it. If, therefore, we wait till the pupillary space is invaded, the resulting scar will forever mar the normal acuity of vision in that direction.

3. Undue procrastination may so modify the ordinarily good prospects from treatment that serious complications may become inevitable (relapsing tendency, strabismus, and even blindness).

4. A proper operation properly done is absolutely harmless.

The chief aim of all our efforts is the removal of the head as the real *nocens* in a practical sense. This, in fact, would be sufficient in a class of patients (now usually put off till they have "enough" trouble). These cases should be ranged in a special division marked by the following characters:

a. Pterygial head quite small, vertical diameter often exceeding horizontal dimensions, and situated chiefly on "transition zone."

b. Conjunctival elasticity only slightly affected.

c. Subconjunctival vascularization absent.

d. No apparent chronic conjunctival hyperemia and congestive exacerbations.

The methods for destruction of the head may vary, but they all should accomplish a *thorough* and *smooth removal*, be entirely *free from danger* and cause sufficient plastic reaction to result in a *firm scar* opposing conjunctival traction. The best means to this purpose is, in my opinion, a very thin galvano-cautery knife with the blade bent about 45° to its insertion, which inclination can be easily produced by a sharp turn of a small needle holder between the jaws of which the glowing blade is fastened.

The cauterizing "spatula" (for such it has become) should not be further from the fingers than about two inches, as a longer distance interferes with the precision of movement necessary for good work. The surface cauterized should be slightly deeper than the adjacent tissue. Repeated stroking allows of grading the effect to a nicety.

Electrolysis does fairly well, but does not easily permit of the production of an entirely smooth effect.

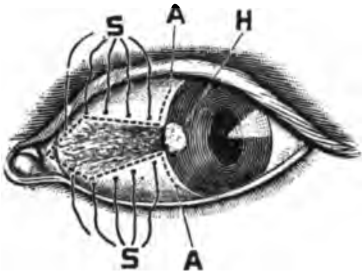
For a full-fledged pterygium excision is the only correct principle, yet simple removal without covering the defect is bad owing to the tendency of cicatricial formations resulting in relapse (practically beyond help) and strabismic turning of the eye. I know that efforts toward covering the defect have been made by approximation of the edges of the wound and, also, by transplantation of mucous and epidermal grafts. In all cases the ideal procedure would be the former, but, owing to the omission of some essentials, it has not made as good a showing as it should.

The following operation is designed to apply to the principle of excision in its most rational form.

The eye is prepared in the usual way, except that crystallized cocain is freely inserted until all smarting has ceased, even during lid motion. The conjunctival sac is flooded to remove excess of alkaloid and a speculum inserted. The neck of the pterygium is then grasped with an iris-forceps and gently pulled from the ball to avoid cutting healthy conjunctiva. A very narrow and sharp-pointed cataract knife is made to pierce the tissues in such a way that the neck is separated from the adjoining healthy lining without any loss of the latter. A pair of scissors is started at the incisions and caused to delimit the growth, both below and above, nearly as far as the plica semilunaris. From this point both incisions are joined by two converging cuts meeting at, or near the caruncle.

Raising the inner end, the operator now separates the growth from the eyeball as far as the head, always tensing it as he clips adhesions, *with the scissors against the pterygial body*. The head is detached by a slow see-saw motion of an ordinary cataract knife (or lance) and the roughness of adjacent parts worn down by the galvano-caustic spatula.

After flooding the eye, inspection will show the amount of subconjunctival vascularization. It may be slight and it may be so abundant that it appears like a red carpet in the denuded space. Pick it up with as wide a separation of the forceps-branches as the wound will allow, and it will be seen that in bad cases it reaches farther over the globe than did the body of the pterygium, although it gradually shades off and thins down as it extends under the healthy conjunctiva. *This vascular matting must be pulled from under the conjunctiva and thoroughly excised.*



H. Head of pterygium.
A. Accommodative incisions.
S. Stitches.

A tenotomy hook is now passed under the lining to be approximated in order to break up adhesions. Near the sclero-corneal junction smart traction is made to allow of the unobstructed passage of the scissors for the "accommodative incisions." Four or five sutures are then passed (not thicker than No. 6) by a curved *round* needle to avoid cutting and tearing the membrane. The first stitch should be as close to the corneal margin as the accommodative incisions will allow. A pair of very small curved scissors will now be made to detach the conjunctiva along the limbus cornea both above and below, for a distance of nearly $^1/_4$ the total circumference. This is followed by immediate elastic retraction of the flap-angle thus freed, *but owing to the fact that the stitches are already correctly placed* approximation must be perfect. The sutures should be tied first either at the center or the inner canthus. The stitches are removed on the third day. Occasionally one will be found to have cut through, but no damage is done. The operation must be thoroughly aseptic. If cocain is used in crystal, it is painless, while the little reaction soreness does not exceed 8-10 hours. Slight traces of redness between the stitch lines sometimes shows for 4-6 weeks, but as far as final results are concerned I claim for this operation:

1. That no other procedure leaves the eye in a condition so nearly normal.
2. That relapses are practically unknown.
3. That the post-operative reaction is very mild, and that it is free from danger when aseptically done.
4. That it is applicable to all cases except in the very few instances in which the pterygial body is so wide that no tissue for approximation remains available.

The perfect covering of the denuded area depends chiefly on the accommodative incisions and the correct placing of the sutures. The former must be close against the corneal circle, and this is easily accomplished if the tenotomy hook is smartly pulled against the sclero-corneal junction as far as the pericorneal conjunctival detachment is to reach. The proper placing of the sutures is insured *by passing all stitches before the accommodative incisions are made*. Owing to the elastic retraction of the conjunctiva, truly opposite points equidistant from the line of section could not be located at a later stage.

A look at the cut will easily supply any possible lack of detail in the description.

In conclusion I wish to state that in the few cases which, on account of excessive width, lack the necessary healthy lining for slipping, transplantation remains the only measure.

# THE RELATION OF TENON'S CAPSULE AND THE CHECK LIGAMENTS TO ENOPHTHALMOS.—REPORT OF A CASE OF TRAUMATIC EXOPHTHALMOS.*

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In 1881 Talko, of Warsau, summarized eight conditions in which enophthalmos had been noticed: Number six of these had reference to the smooth muscle fibers discovered by Sappey in and about the orbit, paralysis or spasm of which, he reasoned would cause respectively enophthalmos or exophthalmos. Dr. A. Eugene Fick, in his text-book on Diseases of the Eye and Ophthalmoscopy, 1896, writing of traumatic enophthalmos makes the following statement without further comment: "It seems to me most probable that the cause is to be sought for in a laceration or rupture of connective tissue fibres that pass from Tenon's capsule to different points of the orbit, and act as suspensary ligaments of the eye ball." Mention is also made of the orbital fascia by Mr. E. Treacher Collins in a paper on enophthalmos published in the British Medical Journal for 1899, page 840. He speaks of the opposition offered by this fascia to the muscle cone within the orbit, and also, referring to a congenital case in which autopsy was made by Heuck, who found the muscles attached too far back and much shortened, suggests the possibility of an absence or misplacement of the check-ligaments.

Further than this, Tenon's capsule and the check-ligaments have received very little attention as possible elements in the causation or prevention of enophthalmos, and it is the object of this paper to study more closely the relation existing between the two, with a view to better establishing a theory which, although not entirely new, seems to have been forgotten. The anatomic relations of Tenon's capsule with its check ligaments are such as would seem to necessitate its involvement to a greater or less extent in every case of this condition. The term Tenon's capsule is here used in its broadest sense, and includes the entire orbital fascia, only that portion of the fascia immediately surrounding the eyeball and optic nerve being so designated by some anatomists.

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*Read before the Ophthalmic Section of the College of Physicians, Philadelphia. March 20, 1900.

The eyeball enjoys a position of equilibrium in the midst of soft tissues, and responds readily to the forces applied through the various muscles, executing with precision movements all of which are rotatory, movements of progression and regression, or as called by Maddox, translation being practically impossible to the human eye. This is only accomplished by the harmonious action of several forces, active and opposing, the resultant being the rotatory motion imparted to the eyeball. Every muscular action has its opposition, and the whole system can be reduced to the principles of the lever with the three constants of power, weight and fulcrum.

At this point a brief description of Tenon's capsule might not be out of place, and the following which is taken in great part from Maddox (Tests and Studies of the Ocular Muscles, 1898) although not complete, embodies the points important to the questions under consideration.

The capsule of Tenon is a fibro-elastic membrane or fascia firmly attached to the periosteum of the orbital margin all around anteriorly, and to the periosteum surrounding the optic foramen posteriorly, thus forming *primarily a cone*, from which issue numerous subsidiary investing membranes covering in part every structure within the orbit. The eyeball rests within this cone, and is itself completely invested by extension therefrom up to the limbus of the cornea. The fascia thus investing the eyeball is divided into a posterior portion extending from near the equator backward around the posterior hemisphere, and an anterior portion from the equator forward. The ocular muscles, also invested with capsular extensions, are without the primary cone until they become tendonous prior to attachment to the sclera, when they must of necessity pierce all intervening fascia, which is done, not by direct penetrations but by a kind of invagination. Starting at the marginal insertion of the capsule are thickened bands of the same, highly elastic and containing close to their origin *smooth muscle fibres.* These are known as the Check-Ligaments, and posteriorly have the following attachments:

1. To the outer layer of the muscle sheath.
2. The belly of the muscle itself, and
3. *To that portion of the fascia investing the posterior hemisphere of the eyeball.* Of the greatest importance is this last distribution, for through it we are better able to carry the point of resistence to the orbital margin. All the ocular muscles seem to be accompanied by check ligaments or their analogues, and in the case of the superior and inferior recti two are present, the levator muscle offering an obstruction to a single ligament for the superior rectus, and the inferior oblique doing the same for the inferior rectus. The involuntary muscle fibres in the Check-Ligaments are under sympathetic innervation, a point which will be again referred to in discussing Beer's theory.

The forces under influence of which, the eyeball is enabled to maintain its condition of equilibrium, may be divided into those acting from behind and those acting from in front of its centre of rotation, the former constituting what is known as the muscle cone, or the four recti with perhaps the levator. the latter being the two oblique muscles and the capsule of Tenon. (The trochlea is here considered the active origin of the superior oblique.)

Considered alone as two opposing muscular forces, the recti would certainly have the balance of power, and displacement of the eyeball would most likely accompany most contractions of these muscles. The orbital fat while acting as a cushion or buffer and lending important support, could only act as such, and could not act as a fulcrum around which to change the direction of applied force. The importance of those portions of Tenon's capsules which are firmly attached to the orbital margin, together with the specialized thickenings known as the check ligaments at once becomes apparent. Also of the greatest importance is that division of the capsule which passes around the posterior portion of the globe, holding the eyeball in a sling as it were, and which, as stated in the anatomic description of the fascia receives direct attachments from the check ligaments. Resistance to backward pressure here is ultimately transferred and traced through the check ligaments to fixed insertion at the orbital margin. I believe all the forces and opposing forces exerted in ocular movements must ultimate in the bones of the orbit, for very uncertain and inaccurate would be these movements, were the basis of support itself unsteady.

For these reasons it seems to me that Tenon's capsule and the check ligaments must always play an important part, and in some traumatic cases, the *all* important part in enophthalmos. Relaxation of the capsule, from any cause whatsoever would *permit* recession of the eyeball, and a sufficient rupture of the capsule either near the orbital margin or in that division passing behind the globe, or rupture of the check ligaments if extensive, would, it seems to me of necessity be followed by enophthalmos. Many cases of traumatic enophthalmos can be readily explained in this manner, and the case which I report below I regard as probably caused by a direct rupture of some portion of Tenon's capsule, most likely the posterior sling, for the reason that recession did not immediately follow the injury. This could be accounted for by the fact that a rupture would be accompanied by hemorrhage which would materially increase the orbital contents behind the globe, thus counteracting the loss of support from before until absorption had taken place. Indeed, proptosis might be the immediate result of an injury ultimately leading to enophthalmos.

The several theories thus far advanced for the causation of enophthalmos all seek to explain the phenomenon by an actual or relative increase in the orbital capacity, and are in effect the same. The modi operandi in the production of this effect are, however, by the reasoning of advocates of each theory, vastly different.

Most fascinating of these theories is, perhaps, that of Beer, which contemplates lesion of nerve centres or tracts, particularly of the sympathetic or trigeminus nerves, resulting in absorption and atrophy of the cellular tissues within the orbit. Admitting that sufficient absorption of the cellular tissue of the orbit may result in enophthalmos and without attempting to controvert the possibility of such absorption being caused by lesions of the sympathetic, and that such lesions are producible by the traumatisms reported, I simply wish to put the question: If these nerve lesions can produce nutritional changes in the orbital cellular tissue resulting in atrophy *can they not also produce similar changes in Tenon's capsule*, thus robbing it of its power to properly support the eyeball in its normal position, for it must be remembered that the check ligaments contain smooth muscular fibres and are also under the influence of sympathetic innervation? And in this connection the thought suggests itself, can not exophthalmos be produced by sympathetic irritation in the reverse way, i. e., causing these muscular fibres to contract.

Gessner presumes periostitis of some portion of the orbital wall, and inflammation of retro-bulbar tissues resulting in cicatricial contraction. The eyeball falls backward owing to the reduced bulk of the orbital contents. That such a condition could cause enophthalmos is undoubtedly true, but that it does in a sufficient number of cases to warrant the establishment of an applicable theory for the majority of cases is untenable. Cicatricial contraction is the final stage in the inflammatory process, and is pathologically not permissible within the short time that enophthalmos is often noticed after an injury. The factor time can therefore be strongly urged against such a theory, in addition as pointed out by Denig, to the free mobility of the enophthalmic eye usually found, which would hardly be expected in one trammelled by cicatricial adhesions. But the three cases reported by Gessner occurred 10, 14 and 14 days respectively after the injury, and might possess the pathological condition necessary to his theory. Furthermore, orbital cellulitis should form a most magnificent field for enophthalmos were cicatricial contraction the cause of the condition. But such is not the case.

Schapringer's theory is that paralysis of Mueller's orbital muscle due to injury of the sympathetic nerve is the governing pathological condition in traumatic enophthalmos.

Mueller's orbital muscle is a collection of smooth muscular fibres interwoven in the fascia covering the spheno-maxillary fissure, and is innervated by branches from the cavernous plexus of the cervical sympathetic nerve. The same question which was put in discussing Beer's theory, is also applicable here, only perhaps more so, for it is difficult to think of this little muscle, acting as it does, commanding the necessary influence to cause or prevent enophthalmos. The spheno-maxillary fissure in the living subject, with the periosteum all around and transmitting the superior maxillary division of the fifth nerve and its orbital branches, together with ascending branches from Meckel's ganglion and the infra-orbital artery is not very spacious. Mueller's fibres control the tension of the fascia covering this fissure, and acting at right angles to themselves, the greatest possible alteration in the size of the orbit must be proportionately very small, too small I should think to alone explain enophthalmos. In Quain's Anatomy, Vol. 3, pt. 3, page 4, however, there is a foot note stating that the spheno-maxillary muscle when contracted causes the globe of the eye to project more from the orbit. The stimulus which causes this contraction probably causes like contraction elsewhere, I would say in the check ligaments.

Lang, Tweedy, Langenbeck, and others regard fracture of the orbital walls as the most probable cause of traumatic enophthalmos. Schapringer in this connection makes a distinction which seems to be a just one. He thinks cases of severe traumatism with undoubted and extensive fracture, causing an absolute and violent displacement of the eyeball, occasionally even into some one of the adjoining cavities, should be considered as such and not as enophthalmos.

The fracture would have to be a depressed one, for a simple linear fracture would after union, theoretically at least, cause a diminution in the size of the orbit, as a certain amount of thickened periosteum and callus should be expected. Notwithstanding the thinness of the orbital walls I am inclined to think that indirect fracture, and fracture in this locality is generally indirect, is more apt to be linear than depressed. However this may be, it must be said for this theory as for the other theories, that, whereas in the condition contemplated thereby enophthalmos can readily and probably does often exist, Tenon's capsule must in such cases be the victim of serious interference.

In conclusion, it seems to me probable that, necessary to the maintenance of the eyeball in its natural position, is the orbital fascia, which has been considered in this paper mostly under the name of Tenon's capsule. That this fascia may become incapable of performing its functions from many causes; that enophthalmos will result from disease or injury of the fascia, if so situated and extensive enough to throw the balance of power in favor of the enophthalmic forces. That this may be the case in paralysis of the smooth muscular fibres in the check ligaments, or in nutritional disturbances leading to atrophy or relaxation of the same; that it may result from traumatic rupture of the check ligaments or the orbital attachment of the fascia; or, especially liable would it be to follow rupture of the posterior investing sheath of the eyeball. Finally as the check ligaments are highly elastic and the whole orbital fascia is fibro-elastic in character, the combined and simultaneous action of the four recti muscles which rarely occurs, producing spastic enophthalmos, would meet with a physiological protest, but not with prohibition on the part of Tenon's capsule. Likewise the elasticity of the fascia must be reckoned upon in those cases of enophthalmos said by some to follow a combined paralysis of the two oblique muscles.

I wish to thank Dr. George E. de Schweinitz for the interest he manifested and the suggestions he offered in the preparation of this paper. My thanks are also due to Dr. Charles A. Oliver for his interest and suggestions.

CASE.—S. C. S., male, aged 32 years, while playing base-ball at the bat on August 17, 1897, received a pitched ball directly in the orbital entrance of O. D. He was knocked down but did not become unconscious, and rode on his bicycle at once to the German Hospital where he presented himself at my Clinic then in operation.

The lids of O. D. were very much swollen and tense. There was extensive emphysematous crackling extending backward over the temporal fossa, and a demonstrable rupture of the conjunctiva through which air escaped on pressure. The nasal bone at the base was fractured on that side. The orbital margin elsewhere seemed to be intact. Forcible separation of the lids showed the cornea to be clear and uninjured; there was a small hemorrhage into the anterior chamber to the temporal side sticking to the iris; very faint reflex from the fundus, no view of same being obtainable. V. O. D. amounted to the counting of fingers at three m. V. O. S. 5/7½. Patient was advised to remain in the hospital but refused, so was instructed to use ice compresses at home.

On the following day the lids were less swollen and the patient more comfortable. The pupil was 1/2 and evenly dilated, the media clear, the fundus was clearly seen, and the macula was apparently healthy. V. 5/21. Two days later the swelling of the lids was much reduced, the eye was open showing extensive sub-conjunctival hemorrhage. A little below and to outside of macula was a very faint grayish streak, crescentic in shape with convexity out about $1^{1}/_{2}$ d.d. in length.

8/27, ten days after injury, V. 5/10, pupil slightly larger than that of O. S. Iris reaction to light diminished. The patient did not return for two and a half weeks (9/14) when he complained of misty vision and asked if his eye would ever come forward again, it having been noted by his friends that the eyeball had receded. V. was 5/15, the pupil partially dilated and sluggishly active to light, and the accommodation much diminished and unsatisfactory. The crescentic streak near the macula noticed on a previous examination had entirely disappeared and no other changes in the fundus were noted. The patient presented enophthalmos of moderate degree, and all further observations ceased owing to his failure to return.

Thinking that it might be interesting to study his condition at the present time, two and a half years after the the injury, I sent for him and he kindly consented to my examination, the results of which are as follows:

O. D. palpebral fissure same width as in O. S. Fold above upper lid much deeper then on the left side. Punctum lacrymales apparently not displaced although patient complains of occasional lacrymation; nothing expressed from canaliculis. The eyeball is $2^{1}/_{2}$ mm. lower than O. S., and has receded within the orbit 2 mm. further than O. S.

The pupil is nearly round, 5mm. in diameter by solar illumination, and the iris shows reduced and limited activity to light accommodation and convergence. The pupil of O. S. is 4 mm. in diameter under like illumination. The movements of O. D. are full in all directions and convergence is strong. There is lessened sensibility to skin irritation on the right side of face in the neighborhood of the orbit.

V. O. D. 5/10 not improved.

V. O. S. $5/7^1/_2$ cum + .37 D. C 180° 5/5.

O. D. reads ty. + .37-17-23 cm. imperfectly.

O. S. reads ty. + .37-15-47 cm.

Ophthalmoscopic examination without mydriatic shows, O. D. Pupil slightly oval l.a. 70° Med. clear, D.ov, 70.° Narrow scleral ring all around with faint traces of choroidal ring beyond out. Deep eccen. excav. out. No pigment disturbance. Best seen without correcting lens. O. S. shows nothing of note save pigment disturbance surrounding disc. Examination of muscles at 5 m. gives R. H. 1° Esophoria 6°-11°—adduction 23°—Abduction 5°—6°—supra duc. and infraduction each 1-1/2°. At 30 cm. No H. Esoph. 2.°

Under homatropin the pupil dilated 2/3 and evenly, and the glass correction confirming retinoscopy was—.25 D. S. ⊃ + .50 D. C. 100,° giving $V \frac{5}{7^1/_2}$? At no time did the patient have diplopia.

# THE SIGNIFICANCE OF CHRONIC RHINITIS IN RELATION TO OCULAR AFFECTIONS.

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The time of narrow specialism has passed; that period was needed, however, as from it date our knowledge of the disease of the different organs of the body. But the profession is now more than ever convinced that a broad general insight in the whole domain of our art must be the first requirement for any specialist.

The tendency nowadays is to ascertain the causes of diseases, partly because having found out that in most cases we were unable to cure, we must aim to prevent and partly because the science of bacteriology awakened our investigators and taught them a new way of thinking. After ophthalmology had been established as a science in the middle of this century by von Graefe, Donders and Bowman, and in a short time had become one of the most exact branches of medical science, the oculist relearned the old truth, that the eye is part of the body and that different conditions of the body will necessarily influence differently this organ. Thus it was not strange that first of all the attention should be directed to the nose and its appendages.

We must not believe, however, that only the physicians of the last part of this century were so clear, John Baptist Morgazni, 1682-1771, the greatest among the great investigators, who for the first time described the orifice of the naso-lacrymal duct, had already called attention to a connection between ocular and nasal diseases. At the end of the last century and in the first part of this G. A. Richter, Welge, Mackenzie Sr., P. Frank, etc., worked in this direction.

Still this knowledge was almost forgotten, it had made no impression till some twenty years ago such men as Ziem, B. Fraenkel, Michel, Bresgen and many others revived it with such success, that we may believe it will remain a common teaching. This subject is so large, the writings about it are so extensive, that we could not do justice to the subject by treating it here in its totality; I, therefore, will limit myself to the influence of chronic rhinitis upon ocular troubles.

The diagnosis of chronic rhinitis is easy, especially after the invention of post-nasal rhinoscopy by Czermak in 1858 and the introduction of cocain in nasal diseases by Zellinek shortly after Köller had introduced it in ophthalmology (1884).

Chronic rhinitis is no infectious disease; mechanical and chemical irritations in connection with a present general or local disposition explain sufficiently for nearly all cases the chronic inflammatory condition. So in those cases, which begin as an acute rhinitis—doubtless an infectious disease—the anatomical inflammatory condition alone remains, brought about by bacteria as a result of the present disposition. Bacteria are never demonstrated in the mucous membrane in chronic rhinitis; the bacteria found in the secretion are the same as those in the normal nose, which propogate immensely in the increased and pathologically changed secretion.

Chronic and hyperplastic rhinitis are different stages of the same disease, they differ only quantitatively, not qualitatively. Still for practical use we may say that the rhinitis is hyperplastic, when. the swelling of the mucous membrane will not be reduced under cocain application. The chronic infiltration with leucocytes of the subepithelial layers, will slowly be replaced by fibrous tissue and also the walls of the vessels will become thickened. The cylindrical form of the epithelium makes place for a more cubic or flat, the layers increase in number, the cavernous tissue becomes enlarged and may increase just as the glands. This hyperplastic condition will affect the whole mucous membrane of the nose or it is more localized and gives rise to pseudo-tumors. Among the latter we might mention more especially the enlargement of the end of the lower and middle concha and the anterior part of the middle one. The anterior part of the inferior concha is generally enlarged at the same time with the whole concha. As in all diseases of mucous membranes, so also in chronic rhinitis we will find a changed secretion, quantitatively and qualitatively. This abnormal condition in the nose will influence the eye in three different ways:

1.° Through the changed secretion.

2.° Through the inflammatory changes of the mucous membrane proper.

3.° By an indirect way.

Ad 1.° The increased and chemically changed secretion will be the cause of an eczema around the nares and of the upper lip, and this will become a source for further infection of the eye and give rise to what we called formerly "scrofulous ophthalmia." This condition will be found most frequently in children. Not all agree in looking at the connection in this way, for instance Ziem puts it just the reverse by saying: primarily we have scrofulosis—one of its manifestations is a hypersecretion of the nose.

It is easy to understand that while an eczema exists Erysipelas facialis might occur and this then extend to the orbit and its contents.

However, there is another way in which the eye may be infected through the nasal secretion, that is to say, forcibly blowing the nose may force the secretion in the naso-lacrymal duct and upward. This canal has its orifice beneath the lower turbinated body, where the mucous membrane closes it more or less—the socalled Hasner's valvula. Often we observe, when tamponing the nose from behind (with the Bellocque's tube), and also in the anterior part, that the blood flows through the canal is lacrymalis in the conjunctival sac. A patient, upon whom I operated last year for an intra-orbital tumor and presented to the academy, complained lately to me that when she has a cold and blows her nose the mucous comes into the eye; the passage had been made easier by the incision of the lower canaliculus lacrymalis previous to my seeing her.*

Ad 2.° The swelling and infiltration of the nasal mucous membrane extends into the naso-lacrymal canal, so that this is easily obstructed. Temporary or continuous closure surely starts an inflammation of the lacrymal sac and the consequences of it are so well known, that I think we can pass over them. But before it becomes closed the passage of the tears will become difficult. An examination with Anel's syringe shows that the canal is not impermeable, but we need more pressure and the outflow in the nose will not be a continuous stream but rather in single drops. Now if we go in with the smallest Bowman probe (No. 1) we will get a feeling of narrowing, much force is required which hurts the patient a good deal. We are unable to use for this crucial test cocain, as we have to deal in the naso-lacrymal duct with the same cavernous tissue as in the nose and cocain would reduce this swelling. This condition which we find in the naso-lacrymal duct even after careful treatment of the chronic rhinitis, is in itself capable of giving rise to the same symptoms as the chronic rhinitis, chiefly those of asthenopia: inability to use the eyes a long time in near work. In this condition I also often found complaints about pain in the eyes and orbits, nictitatio, chronic slight inflammation of the eyelids, skin and conjunctiva, and of course epiphora. The therapy is very grateful, namely, as soon as the passage is made free through the application of the probe the complaints disappear.

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*See New York Medical Journal, Part I. page 717.

I would like to give here my views about the probe treatment: First, although the Bowman's operation of splitting the canaliculus lacrymalis is in itself harmless, this should not be done unless it is absolutely necessary. We are able to dilate the punctum lacrymale with the conical probe, so that probe Nos. 2 and 3 can pass, and when they can be easily brought in the naso-lacrymal canal our duty is done. The tear fluid comes through its own gravity and capillary action helped by the repeated contraction of the musculus orbicularis in the tear sac. The lacrymal sac fills itself through the simple influence of the capillarity and the flowing out is regulated by the air current and partly by Horner's muscle. According to this physiological fact we must not destroy tissue, but try to come as near as possible to normal conditions, which can not happen when we introduce strong thick probes. I am upheld here by the experience of my teachers at Amsterdam, which they saw confirmed in the clinic at Heidelberg. Many German writers warn against the danger of too thick probes and Prof. Panas uses only No. 6 when he has performed strictureotomy.

So does Dr. Bettremieux, who called the attention of the profession to the relation of alterations in the tear apparatus and tic douloureux. First in 1897, lately in the May number, 1899, of the "Archives d'Ophtalmologie." Dr. B. tells about his experience of probing the naso-lacrymal duct with probe No. 2 with the oliveform point in cases of tic douloureux of the face. He saw 3 or 4 cases where an epiphora led to the interference by the oculist and where the painful attacks stopped with the opening again of the naso-lacrymal duct. He thinks that the fine nerve ends of the trigeminus in the mucous membrane are irritated, perhaps through small exostoses and that the pressure of the probe will restore the normal condition. But we might have here a similar condition as in the nose, which gives rise to reflex disturbances.

However, before I treat this class of disorders it is necessary to mention another way on which the naso-lacrymal canal may become narrowed and to which Dr. B. Rischawy called attention in the Laryngological Society at Vienna in last February meeting, that is to say the hypertrophy of the anterior part of the middle turbinated body. The middle concha, resp., the middle noseway is separated from the naso-lacrymal duct by a lamella of bone, which is formed in its lower part by the processus lacrymalis of the os turbinale and in its upper part by the os lacrymale. On exact examination however we find that this limitation is seldom entirely intact. At the place of connection of the os turbinale and os larchrymale and also at other points of the wall we find very often adhesions, but also the intact wall is so thin, that a hypertrophic middle concha is quite well able to compress directly the duct. Removal of this hypertrophic part proved in several cases to be of high value. We now come to the third way of influencing the eye, namely, the indirect way. Under this head I bring the influence of a changed circulation and the reflex symptoms. That the blood and lymph circulation are interdependent nobody will gainsay, so that it is quite evident that a stagnation in the nose will interfere with the orbital circulation. The condition of the chronic hyperplastic rhinitis itself brings more blood to the nose, but the impaired breathing through the nose can only increase, never diminish this stasis. In this way we get a stasis more or less severe in the eyeball and this must have a great influence on chronic ocular diseases. I don't like to go as far as Ziem, who believes that $^2/_3$ of the eye diseases are of nasal origin, but I am of opinion that one should not neglect a careful nose examination in every chronic eye case. Perhaps some obscure cases of opacities of the corpus vitreum are the result of it.

The swelling of the eyelids (edema) which people complain of and which might give the impression of some renal trouble, may be the only symptom of hypertrophic rhinitis, also nictitatio; asthenopia even if combined with a slight degree of weakness of the musculi recti interni. These symptoms as well as headache might be of indirect or more special reflex origin.

The nervus trigeminus is the sensory head nerve and therefore for the nose. To make a nasal reflex possible an irritation is necessary, which influences the nasal nerves and affects other nerves. This irritation is started in the nose from without or orginates in it. The irritations originating in the nose arise either from transitory or permanent pathological changes. Transitory changes are such as active or passive hyperæmia filling the cavernous tissue to the utmost; permanent ones are such as hypertrophy of the mucous membrane. The nerve irritation takes place mechanically by the coming in contact of parts, which do not touch each other normally. But next to this temporary contact there must also be considered direct tension or pressure, which the hypertrophic mucous membrane exerts upon the nerves supplying the changed parts, and the disturbance in nose breathing and the obstacle in the circulation of the blood and lymph.

Central irritations, that is from the brain and spinal cord, can strike the nasal nerves and crop over from these to other nerve paths. In such cases the nasal mucous membrane may be found entirely intact.

B. Fraenkel has shown that nasal reflexes may be had from any point in the nose without the intermedium of the cavernous type.

Of the utmost importance in this respect is the anterior part of the middle turbinated body, which may swell up and will touch the tuberculum septi. There we find a very much thickened mucous membrane.

Still all these changes will not suffice to give rise to reflex troubles; we need for these either a general or a localized predisposition, which may be congenital or acquired.

As far as headache is concerned it might result from some eye trouble, mostly a refraction anomaly or from a hyperplastic rhinitis or from both and only the effect of the treatment will show which is the connection. I think it is of importance to state that hypertrophic rhinitis in itself is able to produce headache (according to Jurasz in 25 per cent. of the cases with hypertrophy of the lower turbinated body and in 13 per cent. with hypertrophied middle one), although Prof. Mendel who treated this subject in "Liebreich's Encyklopædie dez Therapie" does not even mention this cause.

Thus I have tried to show you the importance of a knowledge of the nose for the ophthalmologist.

The task of the physician does not become easier with our enlarged science, but well arranged knowledge will be better retained by our mind than separate loose facts. I think we are on the best way to this broad view and one of its conditions will be, that the oculist should be at the same time a rhinologist.

# REMOVAL OF FOREIGN BODIES FROM THE EYEBALL: BASED UPON A REPORT OF EIGHTEEN CASES.*

BY

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Through the suggestion of Dr. Harlan and the courtesy of Drs. Berens, Croskey, Fisher, Harlan, McClure, Oliver, and Schwenk, I am permitted to present a study of those cases of foreign body in the eyeball admitted into Wills Hospital during 1899, in which an attempt for removal was made. Two cases in which no attempt for removal was made have been added; with an additional one kindly furnished me by Dr. Harlan from his service at the Pennsylvania Hospital.

CASE 1. (Dr. Harlan's Clinic.) K., aged 43, a plumber, was struck in the left eye by a small piece of steel two hours before admission into the hospital. Dr. Ford, the Resident Surgeon, removed the foreign body by a magnet through the wound of entrance. The lenticular capsule was injured and the lens became swollen and cataractous, requiring evacuation two days later on acoount of increased tension and pain. The result was the saving of a good aphakial ball.

CASE 2. (Dr. Beren's clinic.) G., aged 28, a machinist was struck in the right eye by a small piece of metal. The foreign body pierced the cornea and was apparently caught in Descemet's membrane, projecting into the anterior chamber. After ineffectual efforts for its removal had been made by both Resident Surgeons (Drs. Lukens and Weidler) and Dr. Berens, using a spud, knife-needle and a magnet a peripheral incision was made and a magnet again used but without effect, the metal being dragged out by a blunt iris hook after a narrow iridectomy had been performed. The foreign body which was about the size of a pin-point, proved to be some alloy which the magnet had no control over after its removal. The eye recovered with a vision of $^6/_6$*

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*Read before the Section on Ophthalmology, College of Physicians, Philadelphia, February 20th, 1900.

CASE 3. (Dr. Fisher's clinic.) S. McL., aged.30, a machinist, was admitted to the hospital with a small piece of steel situated on the pupillary margin of his left iris, the result of injury the day before. The corneal wound through which the foreign body passed was enlarged with scissors and the steel was removed by means of a magnet; this being done by the Resident Surgeon (Dr. Lukens). On the day following the extraction of steel it was found that the capsule of the lens had been injured in a most peculiar manner—a stellate opacity being seen in the posterior capsule while the anterior capsule was apparently undisturbed. The lens itself gradually became cataractous, and ten days later the anterior capsule ruptured, after which lenticular absorption proceeded uninterruptedly. The patient recovered with good light perception.

CASE 4. (Dr. Oliver's clinic.) On April 14, 1899, J. K., a 32 year old stone cutter, came to Will's Hospital with the statement that he had been struck in the left eye by a piece of steel that morning. Examination showed that there was a foreign body situated in the folds of the iris, down and in, with a corresponding wound of the cornea. The patient was placed in bed, atropin was instilled and iced compresses were applied.

When seen by Dr. Oliver, at 2 p. m., the pupil was fully and evenly dilated except at the position of the foreign body—the mass being situated at the junction of the sphincter and radiary fibres of the iris. Under cocain anesthesia a narrow iridectomy including the bruised tissue of the iris was made, this being done after the piece of steel had been removed from its position in the iris by a magnet (Dr. Oliver operating). The eye was bandaged and local treatment was continued.

In three days' time the eye was quiet and vision was found to be equal to $5/7^1/_2$. In two weeks' time treatment was discontinued. The media were clear and the eyeground was normal, vision remaining as before. Two weeks later, after the mydriatic and cycloplegic effects had disappeared, the eye with the exception of the small coloboma, had become normal in every respect.

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*I mention these minutiæ because in spite of the apparent simplicity of this case it proved to be the most puzzling and the most difficult of this series of cases.

CASE 5. (Dr. Oliver's clinic.) On the 31st of December, 1899, J. N., a 33 year old plumber, applied to Wills hospital with a foreign body in the right eye—three days standing. Examination showed a brilliant piece of metal about the size of a point of a pin embedded in the iris immediately behind a break in the upper outer quadrant of the cornea, about 2 mm. from the corneal summit.

The patient was etherized and a keratome was introduced at the upper outer corneal limbus making a wound about 4 mm. in length. A broad flat electrode was introduced and the foreign body was removed by turning the instrument at right angles to the wound, no prolapse of iris or injury to the lens having taken place. (Dr. Oliver operating).

The patient was placed in bed, atropin instilled and iced compresses applied over a light protective bandage.

The patient was discharged from the house in three days' time, vision being normal. At this time treatment was discontinued, the patient returning in three weeks with normal vision and proper accommodation, and the eye not showing a single mark of the previous traumatism.

CASE 6. (Dr. Fisher's clinic.) T. T., aged 25, a machinist, was struck in the right eye by a piece of steel, two months before admission. He was operated upon for traumatic cataract. Two days later the lens became greatly swollen, the tension increased, and the eye was painful. A linear extraction of the swollen lens was then made, a small piece of steel dropped out of the lens into the anterior chamber, and was removed by a magnet. On leaving the hospital the patient had a vision of $^6/_6$, this being obtained with a + S. 12. D.

CASE 7. (Dr. Croskey's clinic.) Wm. G., aged 26, an iron worker, was struck in the eye by a fragment of cast iron three weeks before admission. He was treated in an ophthalmic hospital in N. Y., in which place a piece of iron was said to have been removed from the eyeball.

Examination showing the presence of a piece of iron, an incision and iridectomy were made below. The piece of iron which was sticking in the lens was successfully removed by means of an iris forceps after a futile attempt had been made for its extraction by a magnet, and the eye was thus saved with a cataractous lens.

CASE 8. (Dr. McClure's clinic.) M. K., aged 42, stone cutter, came to the hospital with a cataractous lens. He gave a history of an injury to the eye several months before. On examination a small piece of steel could be seen imbedded in the lens. The metal together with the iris was grasped by an iris forceps and dragged out through a corneal section, and an iridectomy completed. The size of the steel was 5x1.5 mm. No gross lesions of the eye except a cataractous lens remained.

CASE 9. (Dr. Harlan's clinic.) M. E., aged 29, laborer, was struck in the left eye one hour before admission by a piece of steel which could be seen imbedded in the crystalline lens. Under ether the corneal wound was enlarged and the metal was removed by a magnet, with the loss of some vitreous humor. At the end of two weeks under constant application of compressed bandages (no ice being used,) the wound had closed. The patient left the hospital with the eye quiet, there being an irregular scar in the center of the cornea. The lens was cataractous, but the eye had good light perception.

CASE 10. (Dr. Oliver's clinic.) A laborer suffering from a traumatic irido-cyclitis with retention of a foreign body (a piece of coal,) in the crystalline lens of three months standing, was admitted into the hospital and operated upon under protest by the surgeon for the removal of the foreign body. Although the operation was smooth and clean in all respects and the wound promptly closed, the eye showed infection the second day as expected necessitating enucleation.

CASE 11. (Dr. Oliver's clinic.) Wm. B., aged 48, an iron worker, applied at hospital in the morning for relief from an injury by a piece of steel, occurring two days previously, the patient stating that the metal was still in the eye and that he had been advised by a medical practitioner to have the foreign body removed. The patient was at once admitted into the hospital wards. The cornea was steamy. The iris was discolored and there was hypopyon.

A red glare could be obtained from the fundus. Vision equalled the ability to see to count fingers at two meters distance.

The patient was put in bed and iced compresses and atropin were used. A few hours later it was accidentally discovered that a skiagraph, showing the presence of a foreign-body in the eyeball, had been made the day before, although plates were not seen.

Examination by Dr. Oliver showed a wound in the sclera up and in, just behind the ciliary region. An immediate extraction of the foreign body was made by a magnet through the wound while the patient was under the influence of ether. The foreign body proved to be a piece of steel measuring 1x5x10 mm. and weighed two grains.

In three days time the vision decreased to shadow movements and a bright yellow spot the size of a pin's head was observed on the posterior capsule of the lens up and in, this being surrounded by vitreous haze and having the appearance of a focus of infection. By the end of one week the opacities had so greatly cleared that vision rose to 1/200 of normal, and at the end of one month to 1/40.

Case 12. (Dr. Harlan's clinic at the Pennsylvania Hospital.) *"Small chip of steel located in the vitreous by X-rays, and removed by magnet three weeks after its entrance. J. M., admitted to the Pennsylvania Hospital with the following history: while drilling a hole in granite with a highly tempered steel drill received a small fragment of the tool in right eye. A minute scar could be seen at the temporal margin of the cornea and there was a hole in the iris just behind it. The lens was cataractous and a localized swelling bulged the iris slightly at the point of injury. There were several firm posterior synechia but the eye was quiet. The patient, who insisted that he had never had any pain in the eye to speak of, was concerned only about the loss of vision, and was convinced with considerable difficulty of the necessity for radical measures.

"The appearances presented were strikingly like those in a case which had been under my care last winter at the Wills Hospital and which was reported to the Section.

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*Verbatim report of Dr. Harlan.

In that case Dr. Leonard located the foreign body in the lens margin and it was easily removed with a magnet through the reopened wound.

"In this case I was encouraged to hope for a similar experience, but a radiograph taken by Dr. Stewart of the Pennsylvania Hospital showed that the particle of steel was situated farther back. The case being referred for more definite localization to Dr. Sweet, he reported that the foreign body was about 4 mm. long and 2 mm. wide. He further stated that it was located 3 mm. below, 6 mm. to the temporal side, and 21 mm. back of the center of the cornea.

"While an assistant rotated the eye forcibly inward and upward I made an incision in the ball as nearly as possible in the position indicated. The point of my Graefe knife struck the fragment of steel which was removed with a Hirschberg magnet. It measured exactly 4 mm. long.

"The only error that Dr. Sweet has made is in the estimate of the width of the piece, which instead of being 2 mm., at the wider end is only 1.5 mm. tapering to 1 mm. at the other. I think the members of the Section will agree with me that this is pardonable and that too much credit can not be given to Dr. Sweet for his wonderfully accurate work.

"The wound in the sclerotic was united with a fine silk suture, which was removed on the fourth day. There was very little reaction and a week after the operation the intraocular tension was normal and the eye was quiet.

"It is a point of some interest that the foreign body had remained in the eye for three weeks. This illustrates the fact that the iris and the vitreous are the only localities that afford much hope for the removal of a foreign body after the lapse of a considerable time. If it had been lodged in the choroid it would in all probability have been so involved in cicatrical tissue that no magnet could have released it."

CASE 13. (Dr. Schwenk's clinic.) While E. D., aged 57, a laborer, was cutting rivets, the head of a chisel was broken into pieces, one of which struck his left lower lid. The metallic chip cut out a narrow piece of the eyelid and entered the eyeball, making a large, ragged, V shaped wound in the ciliary region below. This was followed by prolapse of the iris and vitreous. Light perception was limited to an area in front and above. Several attempts were made at once by the Resident Surgeon (Dr. Lukens.) to remove the steel by a magnet, passed through the wound, but they were unsuccessful. The patient was then put abed, iced compresses and atropin were used, and no further attempts were made at extraction. Enucleation was performed three days later for panophthalmitis. A thin, jagged scale of steel, about the size of a finger nail, was found.

CASE 14. (Dr. Schwenk's clinic.) C. F. R., aged 26, a laborer, was struck the day before his admission by a piece of steel, making a wound of the cornea and lens. Fingers were counted at one meter. No skiagraph having been taken yet in view of the nature and the history of the case, the immediate use of a magnet was determined upon. The magnet was passed into the enlarged wound, first under cocain anesthesia, then under ether, but without success. Enucleation was at once performed and the magnet was again passed into the excised eyeball, extracting the steel at the first attempt.

CASE 15. (Dr. Schwenk's clinic.) J. N., aged 44, an iron worker, gave a history of having been struck in the left eye two years previously by a piece of brass, the exact nature of which injury he could not tell. Early in the morning of the day of admission to the hospital he was struck in the same eye by a piece of flying steel making a wound at the inner corneal limbus. The iris beneath was torn, and in the vitreous chamber, just back of the ciliary body, a whitish mass could be seen, which was thought to be a lymph deposit, the result of the former injury. This being further emphasized by the iris wound having the appearance of being old. The patient was put in bed and iced compresses and atropin were used. Two days later the lymph-mass in the vitreous having become absorbed, a large silvery bright area occupying its place, was exposed by both oblique illumination and the ophthalmoscope. Dr. Schwenk, the surgeon in charge, did not see the patient until three days later, when the bulbar conjunctiva had become chemotic. Under cocain a corneal section and narrow iridectomy were made at the site of injury. The magnet was passed into the eyeball, bringing the steel to the wound, but not delivering it; the wound being too small and of improper shape. Extraction was completed by seizing the piece of steel by a delicate tenotomy forceps and slightly forcing the wound. The escape of some vitreous followed the procedure. The foreign body was about 1x2x4 mm.

The patient was discharged sixteen days after the operation. The eye was quiet and the lens was cataractous. He returned two weeks later on account of pain from swollen lens. The lens matter was evacuated by a linear extraction the patient making an uneventful recovery. Three months later the patient had a corrected vision of 5/8 of normal.

CASE 16. (Dr. Fisher's clinic.) J. P., aged 30, a laborer, presented himself at clinic with a scar at the inner limbus of the right eye. There was a fenestra in the iris directly beneath. From this could be seen by both oblique illumination and ophthalmoscope, extending downward and backward, a line of opalescent vitreous change; at the end of which there was a shining foreign body. The patient gave a history of injury by a piece of steel eleven days before; vision equaled 6/20. Patient refusing immediate admission to the house went back to his home in the interior of the state, returning three days later, when he was admitted and operated upon by Dr. Fisher. Under cocain a small T shaped incision was made at the site of the external scar, and extended through the iris. A small magnet electrode was passed through the incision and a piece of steel, triangular in shape, its largest dimension being about 2 mm., was extracted. Next day the wound was closed, no disturbing reaction following. The patient left the hospital with a vision of 6/15. The lens was hazy at its extreme inner periphery, the track in vitreous remaining, having increased to probably double its previous width. Two months later vision had risen to 6/9, with correction, (a weak convex spherical).

The following is reported because it shows the usual behavior of an eye toward the presence of copper:

CASE 17. (Dr. Beren's clinic.) Frank H., aged 13, was injured on the 4th of July, 1899, by the explosion of a cartridge from beneath the wheels of a street car. He was admitted to the hospital a few hours later. Examination showed a wound in the upper lid of the right eye, also a second one 6 mm. long in the ball beneath, back of the ciliary region. Ophthalmoscopic examination showed good fundus reflex, with two bands of opacities extending downward in the vitreous.

No attempts were made to remove the foreign body, the wounds were repaired by the Resident Surgeon (Dr. Lukens). Suppurative choroiditis supervened, and the ball was excised ten days after the accident. A fragment of a copper shell about the size of a small finger nail was found in the bottom of the vitreous chamber, anterior to the equator.

CASE 18. (From Dr. Schwenk's service, is reported to illustrate another type of foreign body cases.) W. F. B., aged 35, a blacksmith, was admitted into Wills Hospital Dec. 23, 1899, suffering from a kerato-iritis of the right eye. The anterior chamber was one-third filled with pus. The pupil was slightly displaced downward and there was marked bulbar injection. He gave the following history: Vision had been defective in the right eye since 1874, at which time he was injured in the eye by a small piece of metal. The foreign body was seen in the anterior chamber by his parents, who made several attempts to remove it, using a pocket knife. The next morning the foreign body could not be seen, his parents supposing it had escaped during the night. The eye never gave him pain or discomfort, save the impairment of vision which was equal to counting fingers at one foot.

Seven weeks before admission he was struck in the affected eye by an iron bolt. An hypopyon keratitis followed, but was controlled by appropriate treatment. The patient then resumed his work. This was followed by a return of the hypopyon, pain and redness of the eyeball, as seen on his admission to the hospital.

A Saemisch section was made at once, completely evacuating pus. The usual antiphlogistic measures of iced cloths, atropin and rest in bed were used. The pain and intensity of the inflammation were temporarily relieved, but returned at the end of one week with greater violence than before.

An X-ray was now made by Dr. Leonard, who reported the presence of "a small foreign body in the lower posteterior segment of the vitreous chamber."

Enucleation was performed, and the foreign body was found as located by the skiagraph. It proved to be a small chip of steel and was encysted in the choroid.

The retina and choroid had undergone degenerative processes. The vitreous humor was semi-liquid, the anterior part of it was cloudy from the products of the recent irido-cyclitis. No recent inflammatory process could be detected about the encysted foreign body. There were no symptoms of sympathetic irritation.

To summarize:

1. In this series of cases the crystalline lens has proved itself to be the most tolerant of a foreign body.
2. The phagocytic power in healthy eyes was very strong.
3. The cases have shown that all foreign bodies should be removed from the interior of the globe as quickly as possible, especially if they are situated near any of the fixed tunics of the eye as they are very apt to become encysted and apparently to become innocuous for irregular periods of time, and thus missed and allowed to remain until they at some future time, by reason of traumatism, or atrophying processes, are again set loose and excite most disastrous influences upon the organ itself, or even upon its fellow.
4. They have shown that wherever possible the wound of original entry should be used for the extraction of the foreign body.
5. They have shown that skiagraphs giving the exact location of the foreign mass, are in the present day of aseptic surgery, absolutely indispensable when the foreign body can not be seen by the ordinary instruments of precision.
6. They have shown that cases of doubtful foreign material, in which no obtainable history as to the nature of the object can be obtained, should first be submitted to skiagraphic study, and should the mass prove to be steel or iron, magnets* can be safely employed, followed in some cases by the use of forceps.
7. They have shown that particles of other metals, after localization, should always have the attempts made with the forceps for their removal.
8. They have shown that the presence of copper or stone within an eye, gives the most unfavorable results.

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*In this series the electro magnet of Hirschberg was employed.

9. They have shown that wounds in the scleral region behind the ciliary zone, although as a rule made by objects of a large size, are primarily, if aseptic, of less danger and damage, to the organ, than those, although very much smaller, which penetrate and injure the tissues of the anterior segment of the globe.

10. They have shown that primary treatment, pending operative interference, in uninfected cases, should be palliative and antiphlogistic, consisting in rest in bed, iced compresses, atropin, boric acid washes, etc.

These rules hold good no matter to what extent the traumatism has affected the organ, or to what degree the removal of the humors has taken place, as many eyeballs have been saved, which have been considered useless by hasty judgment—eyeballs that have proven valuable to their possessors for visual purposes.

In addition it may be noted that all traumatisms of the eye, in which there is entrance of a foreign body, the nature of the offending material, its position in the eye, and the condition of the organ, must not only be considered, but the state of the patient's health and his surroundings must be taken into consideration before a prognosis can be given.

# SPASM OF ACCOMMODATION IN GLAUCOMA RELIEVED BY ESERIN.*

By J. A. Lippincott, M. D.,

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Mrs. J. G., aet. 30, a blonde and rather delicate looking woman, consulted me March 3rd of the present year when she gave me the following history: Her eyes were never very strong and there has been no sight to speak of in the left for ten years. Of the manner or circumstances of its failure she is unable to give a clear account. Two years ago after an operation for lacerated cervix and uterine prolapse the sight in her right eye began to fail. The impairment in vision progressed gradually but steadily up to the present time being accompanied by occasional rather severe attacks of pain with rainbow vision. *Status praesens.*—V'n. R. E. 20/C. L. E. l. p. Left eye deviates upwards about 20°. Pupils of both eyes 7 mm. in diam. Deep vessels of globe slightly dilated and tortuous, but sclera on each side of normal tint. No haziness and no special anesthesia of cornea. No special increase of tension perceivable.

Ophthalmoscopic examination of right eye showed clear media. The disc presented a characteristic and deep glaucomatous excavation, and was surrounded by a halo. The disc floor was mottled and silvery blue in tone. The retinal vessels were tortuous, the veins being rather larger and the arteries smaller than normal.

The left fundus was not so distinctly seen owing to a moderate haziness in the anterior part of the vitreous, but the general appearances were similar to those in the other eye ground.

The vision of the worse eye—the left—could not be improved by any glass, whereas on testing the right I found that the patient with — 4.5 — 1. cy 145° could make out 20/xxx-. Read best with — 1.5 —1. cy 145°. The refraction in the blind eye could not be estimated ophthalmoscopically with any degree of accuracy on account of the opacity of the vitreous. The right visual field, which was much contracted, was limited practically to the lower outer quadrant, the extreme outer boundary being at 50°, the lower at 25°, the inner at 5° and the upper at 15.°

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*Read at the recent meeting of the Amer. Oph. Soc. at Washington, D. C.

A solution of eserin gr. $^{1}/_{5}$ ad ℥1 was ordered to be used morning and evening.

March 10.—Pupils 6 mm. in diameter. V'n. R. E. 20/xxx—. With — 1. cy 145° 20/xxx+. Adding the — 4.5, which at the first visit improved her sight so much, now impairs it decidedly.

March 16.—Pupils $5^{1}/_{2}$ mm. Vision and refraction same as at last visit. The patient who has been suffering from a cold has had pretty severe pain in both eyes especially the left. The eserin solution was increased in strength to gr. $^{2}/_{5}$ and to it was added morphia sulphate and cocain muriate of each gr. 1 ad ℥1.

March 20.—Has been almost free from pain. Pupils $4^{1}/_{2}$ mm. V'n. = 20/LX. With — 2. — 1. cy 145° = 20/xxx+. Visual field today shows enlargement, chiefly downward, the lower boundary reaching 45°. The innermost point also has moved to near the 30° circle.

Careful measurement of the excavation today makes the depth 2 mm. Inasmuch as the accommodation was being over stimulated by the eserin I directed a suspension of the myotic until the next day.

March 21.—Thirty hours since last instillation of eserin. No pain. Pupil $5^{1}/_{2}$ mm. T'n. + $^{1}/_{2}$. V'n. 20/LX— and with — 1.5 — 1. cy 145° = 20/xx—. As the effect of the eserin upon the accommodation must by this time have passed away it was evident that there was a return of the *glaucomatous* spasm, and I therefore directed the resumption of the weak eserin solution (gr. $^{1}/_{5}$ with morphia sulphate gr. 1 ad ℥1).

March 26.—Pupil $4^{1}/_{2}$ mm. and more sensitive to light. T'n. normal. V'n. 20/XL. With + .5 — 1. cy 145° = 20/xx—. Eserin solution reduced to gr. $^{1}/_{7}$ ad ℥1.

April 7.—Has had a rather severe attack of suppurative tonsillitis. R. E. with — 1. — 1. cy 145° V'n. = 20/xxx.

L. E. some pericorneal congestion.

April 16.—R. E. with — .25 — 1. cy 145° V'n. = 20/xx—, and reads best by adding + 1.25 to above.

Vitreous haze in left has almost disappeared and skiascopy shows simple MAs = of 3.D axis horizontal. Optic disc excavated to a depth of 2 mm. (About the same as R. E.)

April 25.—T'n. normal. Pupil 6 mm. in diameter. R. E. with + 1. cy 55° V'n. = 20/xx—. Reads best with the same. L. E. V'n. not improved.

A very similar case is reported in the Klinische Monatsblätter für Augenheilkunde for June, 1899, by Dobrowolski, of St. Petersburg, who prefaces his report of it by relating a conversation held in 1870 with Nagel in which the latter asked him whether he had observed the phenommenon under consideration in the prodromal stage of the disease, adding that he (Nagel) had seen several such cases. Dobrowolski states that at that time he felt skeptical about the matter.

His patient, 62 years of age, was suffering from chronic glaucoma. R. E. M. V'n.= 20/LXX. Clear media. L. E. counted fingers at 20 inches. Opacity of the vitreous. Five days later, after the use twice a day of eserin gr. 2 ad ℥i, there was marked myosis and the right eye had become emmetropic with vision 20/LXX. Stopping the eserin for a day, myopia appeared, to disappear again on the reapplication of the drug. This occurred three times. Pilocarpin, which produced as decided pupillary contraction as the eserin, reduced the myopia only from $^1/_{16}$ to $^1/_{24}$, showing that the visual improvement was not due to the contracted pupil. In the left eye the vitreous opacity yielded to the drug and vision became = 20/LXX, but the myopia of $^1/_{16}$ remained unchanged.

The view that the visual improvement in the right eye was independent of the myosis was corroborated in my case, as, at the second visit, notwithstanding the decided diminution in the myopia, the pupil was 6 mm. in diameter.

Dobrowolski attributes the myopia to a spasm of accommodation produced by irritation of the ciliary body due to inflammatory changes incident to the glaucomatous process. That this explanation is in the main correct will probably be generally conceded although there may be a difference of opinion as to the existence of a true inflammation in all cases of glaucoma. The fact that the artificial myopia in my case was so much greater than in Dobrowolski's, is of course due to the fact that my patient was so much younger and the lens therefore more responsive to ciliary irritation. Indeed the cases must be quite exceptional in which enough lenticular elasticity remains at the period of life most affected by glaucoma to produce through the irritation caused by the disease or in any other way, a notable degree of myopia. Further and more exact observation may, however, show that the phenomenon is not so rare in younger persons.

It was interesting to watch in my case the varying action of the eserin on the accommodation according to the strength of the solution employed. At the second visit, March 10th, the relaxing effect of a weak solution on the glaucomatous spasm was evident. At the fourth visit, March 20th, the stimulating influence of a stronger solution, producing the ordinary eserin spasm, was manifest. At the fifth visit, March 21st, the cramp induced by the drug had given way and the glaucomatous spasm had begun again to show itself. At the sixth visit, March 25th, after the renewed application of the mild solution, the relaxing influence of the latter was clearly shown in the laying bare of the hypermetropic element in the case. This fact of the two-fold action of eserin may have a bearing on the therapeutics of glaucoma, especially with reference to the strength of the solution employed.

At the last visit, April 25th, there was practically no myopia present but instead a simple hyperopic astigmatism, and now the accommodative power, which had been in abeyance, was found to have been restored. A gradual improvement in the fields of vision was also noticeable.

# A DESCRIPTION OF THE ROYAL LONDON OPHTHALMIC HOSPITAL.

### BY WM. CAMPBELL POSEY, M. D.,

PHILADELPHIA.

The Staff of the Royal London Ophthalmic Hospital, or as it is familiarly known, Moorfields, have moved into their new quarters. As so many of our countrymen are interested in the institution, there being always a large number of American physicians in attendance there, I thought a short description of the new hospital might be of interest to the readers of the ANNALS. At my request, therefore, Mr. Treacher Collins, to whom must be given the credit of designing the building, very kindly took me over the entire hospital, and I am indebted to him for the details of the description of the structure.

The corner stone of the hospital was laid by the Prince of Wales in 1897, but the formal opening was not accomplished until January 27th of the present year, when the ceremonies were presided over by the Duke and Duchess of York. After the royal party had been received by Sir John Lubbock, the President of the hospital board, the Duke, opened the door of the hospital with a gold key which was handed to him by the architects. An inspection of the building was then made by their Royal Highnesses and the surgical staff, after which the party assembled in the commodious waiting-room of the out-patient department and listened to addresses made by the Chairman of the Building Committee, Sir John Lubbock, and the Duke of York. The latter congratulated the committee and the architects upon the successful accomplishment of their purpose in creating such a noble building where the enormous number of patients who visited the hospital might be properly cared for, and pointed out further that the sale of the old building had netted them £78,000, and that the new hospital had cost about £80,000, and that they started quite free from debt.

The new hospital is situated on the City Road, a busy thoroughfare about fifteen minutes distance from Liverpool St. Station, the site of the old building. The structure is quite imposing, being constructed of brick and limestone, and it will probably interest Americans to know that it adjoins the cocoa factory of "our friend the enemy", Sir Thomas Lipton, of Shamrock fame. The hospital possesses the advantage of having its three other boundaries formed by streets, permitting the ready access of sunlight and air, and enabling the vast number of patients to gain ready egress and exit.

The out-patients pass through an entrance quite separate from that of the officers of the building, and find themselves in a spacious room opposite to a glass enclosure forming the clerk's office. All new patients are registered here and receive their papers bearing the different surgeons' names, as of old. Adjoining this room is an office for the official whose duty it is to make inquiries in certain cases into the circumstances of intending recipients of the charity. After the patient has received his paper, he seats himself on one of a series of benches sufficient to accommodate 300 people. Entrance is had from this room directly into the consulting-room by three different doors, corresponding to the number of surgeons on duty each day. This room consists of a large hall which is amply lighted by a large skylight, but in such a manner that the light falls upon the patient's face, while the surgeon is in the shadow. It contains six desks for the surgeons and their assistants, the doctors and their patients standing during the entire examination. From this room the patients pass into either one of three rooms, the refraction room, the dark room or into a small consulting room. The refraction room immediately adjoins the consulting room and is separated from it by a large glass partition. It contains six boxes of trial lenses, and the patients are refracted standing by the clinical assistants. The dark room is quite spacious and communicates with both the consulting and refraction rooms, and is provided with 18 separate compartments each containing an electric bracket which is provided with the regulator devised by Lang, thus permitting of the ready graduation of the intensity of the light. The private consulting rooms communicate with the refraction room and each has a small waiting room, and one for minor operations connected with it.

Mr. Collins has shown his ingenuity in the manner in which the exit passage for the patients is arranged. This is connected directly both with the refraction and consulting rooms, and patients may pass from them directly into the street, or go at once into the spectacle room, or they may pass into the dispensary through a turnstile and await their drugs in a separate waiting-room. This room is divided into two, with the drugstore in the middle.

On this same floor, and readily accessible, are a refreshment bar with small kitchen, where a light lunch is served to the patients at a nominal cost, a room for X-Ray work under the charge of Mr. Davidson, and a spectacle room. At Moorfields the patients may obtain their spectacles in the building from Mr. Hawes, one of the best opticians in London, at almost cost rates. Neither the hospital nor the surgeons benefit by this arrangement, the sole object of this plan being to save the patient time and money.

Connected with these waiting-rooms by covered corridors, there are a number of water-closets. All of the walls of this department, with the exception of the ophthalmoscopic room, which of course is dead black, are lined with glazed brick, and the floors throughout are made of terrazzo, a species of asphalt. This permits of their ready flushing after the crowds of the morning have been dissipated.

The designers of the building have exercised considerable ingenuity in providing proper ventilation both for the wards and the out-patient department. Fresh air, which is warmed in winter by hot water pipes contained in the air trunks, and cooled in summer by ice in the same location, is fanned into the different rooms by powerful engines. The supply for the Out-patient Department is quite separate from that for the rest of the house and seemed to be quite adequate upon even the foggy days of October and November when I visited the institution. The vitiated air is removed by a separate series of air funnels into a large shaft which empties well above the roof of the main building. The remainder of the ground floor is devoted to administration purposes, to retiring rooms for the staff and students in attendance at the clinics, and to an ample library. The store rooms are in the basement together with the boiler-house, disinfecting room and porter's accommodations.

The upper stories are reached by two elevators and by a broad flight of stairs.

The second floor contains the quarters of the resident staff and of the matron. Each of the resident surgeons has his own sitting room and bedroom, and the matron's quarters are at the end of a hall, composing a very comfortable suite. The other rooms on this floor are the operating rooms and its adjoining receiving rooms, etc., and the museums and laboratories. The operating room is situated in the centre of the building and receives a flood of north light by three windows, the centre one consisting of a single sheet of glass is fixed, but the side ones permit the entrance of air as well as light. A large blind which runs in a groove made of gunmetal and when not in use is rolled up in a case made of the same material, may be raised before all the windows when it is desired to darken the room. The radiator for heating the room is placed directly in front of the window and is composed of a number of separate coils of copper pipes, so arranged that they may be swung out clear on the hinges to permit of ready cleaning. The walls and ceiling of the room are of opalite, or opaque tinted glass tile and are rounded at the corners to avoid the accumulation of dust, and for the same purpose the doors are also made of plain slabs of wood without crevices. The floor is of terrazzo. The operating table consists only of glass and iron, and on either side of it there are two steps formed of solid blocks of masonry, for students to stand upon whilst they watch the operations. The blackboard for demonstration purposes and the mirror are set in flush with the wall, to avoid any chance for the accumulation of dust.

The instrument case is over 6 feet high, and is composed of glass and metal painted white. The washstands are ranged upon one side of the room and are provided with pedal action for turning on the water. The constant and interrupted currents are both at the side of the operating table and a large Haab magnet is kept in an adjoining room. The sterilizer is heated by electricity.

The museum and laboratories are situated at the end of the hall opposite from the matron's quarters, and are the one disappointing feature about the building, for they seem scarcely commodious enough to accommodate the students who wish to avail themselves of the remarkable facilities offered by this institution for pathological work. The light, though, is excellent, and there is ample room for six men to do microscopical work. The curator has a small laboratory to himself and a dark room for photographic work adjoining, and by a private staircase leading directly into the library below, which immediately adjoins the out-patient department, he has easy access to both of these departments as well as to the operating chamber.

The third floor is taken up chiefly by a ward of 18 beds, and a number of smaller rooms containing 4 and 2 beds each, respectively. At the end of this floor is a common room for nurses which is furnished in a most attractive and homelike manner.

The fourth floor contains the kitchen and servant's quarters, all the cooking being done with gas and steam. Upon this floor also are separate departments for 16 nurses, which are marvels of comfort and neatness. There are also two large wards on this floor, one for children and another which is used at present as a large day room.

There is a fifth floor also, which contains a ward for sick nurses and a ward kitchen.

The water-closets and sink rooms of all the floors are placed in a separate building, a sanitary tower, which is connected with the main building and wings by covered bridges.

The course of lectures for the coming winter is already well under way, and a larger number of students than ever is in attendance.

Moorfields is truly a remarkable place and though to the uninitiated it may appear one of seeming chaos and indifferent work, there is no other place in the world where the student can see so many cases, or where he has the same opportunities for personal examination and treatment of the patients.

The tyro will gain but little there as but little instruction is given, but the student who is familiar with the technique of ophthalmoscopical examinations, and needs only the actual handling of large numbers of patients to make him a finished ophthalmologist, will revel in the opportunities which the institution gives him.

# ABSTRACTS FROM ENGLISH COLONIAL OPHTHALMIC LITERATURE.

BY FRANK ALLPORT, M. D.,

CHICAGO, ILL.

Quarter ending June 30th, 1900.

### The Place of Protargol in Eye Work.

STEPHENSON, SYDNEY, M. D. *(Edinburgh Medical Journal.)* In blepharitis cases the author uses a 10 per cent. ointment in equal parts of vaselin and lanolin. He finds no particular benefit from it in the seborrhœic forms, but in the eczematous type a rapid cure follows its use at night after removal of the crusts. There is no pain from its application and this is of course one great advantage. In conjunctivitis due to gonococci the results are better than with any silver salt previously used; in severe cases he treats the conjunctiva twice in twenty-four hours with a 50 per cent. solution; corneal complications are a special indication for the use of this strong solution. In severe acute muco-purulent conjunctivitis he uses a 10 per cent. or 20 per cent. solution and paints it on the conjunctiva. In a mild conjunctivitis, however, he finds it inferior to zinc chlorid. He does not find especially good results in chronic trachoma, but has given it quite an extensive trial in this disease, dusting it over the affected surface once or twice daily for several months. In acute trachoma a 2 per cent. solution of silver nitrate used for a week or more is better. In dacryocystitis protargol is the best remedy the author has found. In these cases the lower canaliculus is slit and the dilated sac washed out with a 5 per cent. to 10 per cent. solution of protargol until there is no pus in the return fluid. Probes are at the same time passed through the nasal duct to dilate the stricture which is usually present. No other agent reduces lacrymal inflammation so quickly.

### Gonorrhea in its Relation to Diseases of the Eye.

BULLER, FRANK, M. D. *(Montreal Med. Journal.)* Dr. Buller describes two forms of inflammation of the eye due to gonorrhea—one the well known purulent conjunctivitis which can usually be traced to direct inoculation or infection, and the other an iritis always occurring in the latter stages of the disease and usually in connection with other manifestations of gonorrheal rheumatism. In the iritis the micro-organisms do not directly attack the intraocular tissues but the eye is irritated by the toxins after systemic infection. The treatment of this latter form does not differ from that of rheumatic iritis except that it is advisable to cure the urethral disease as soon as possible. The author treats the gonorrheal conjunctivitis in the usual way with nitrate of silver and perchlorid of mercury and frequent antiseptic cleansing. He thinks protargol is too recent a therapeutic agent, that its place as a remedy in so serious a malady is not yet well enough established to risk its use.

Two cases of gonorrheal conjunctivitis of only twenty-four hours standing are cited.

The patients were anesthetized and the conjunctiva thoroughly washed with perchlorid of mercury; the outer canthus was then freely divided so that the lids could be completely everted and every part of the conjunctival sac exposed. After irrigating with water and protecting the cornea with vaselin, the entire conjunctiva was freely swabbed with an 8 per cent. solution of nitrate of silver, washed with perchlorid of mercury 1 to 2000, and smeared with vaselin; cold compresses were then applied for twenty-four hours. This resulted at the end of twenty-four hours in only a severe muco-purulent ophthalmia which disease ran a mild course and terminated in recovery with little impairment of vision. There was some corneal ulceration but it was not destructive.

### An Interesting Case of Acquired Double-Sided Lenticonus Posterior.

Eye and Ear Clinic Royal Victoria Hospital. *(Montreal Med. Journal.)* There had been gradual loss of vision for the past four or five years but previous to that the sight had been excellent in every respect. On ophthalmoscopic examination there appeared, both by the direct and the indirect methods, a more or less rounded opacity near the posterior pole of each lens, but in certain positions clear images of the retinal vessels and of the fundi showed through the centers of the lenses, proving the opacity due more to the irregular refractive condition than to the definite changes in the lens substance.

The R. V. = 6/60, with mydriatic R. V. = 6/60: 0° — 0.5 — 0.5 = 6/24

A preliminary right iridectomy was done and about a month later a right extraction was performed by McKeown's method, i. e., the capsule was first filled from the lens by the injection of a physiological salt solution; after the entrance of the solution there was no red reflex from the fundus, the lens having become totally opaque. A free incision was made in the capsule and the lens easily expressed; the little amount of lens substance remaining was washed out with the salt solution. A month later a thin capsule which had formed over the pupillary area was needled and at the end of another month there was still a thin capsule over the pupillary area but with a small central opening through which, with properly adjusted glasses, the patient had normal vision.

### Optic Neuritis in Children.

BUCHANNAN, LESLIE, M. D. *(Edinburg Med. Journal.)* The author mentions the frequent accompaniment of enlargement of the cervical glands with optic nerve atrophy or moderately acute optic neuritis of both eyes in children, finding possible evidence in this that the eye trouble may be traced to a former tubercular meningitis of mild form or to a tubercular growth. In some cases the enlarged lymph glands are the only indications that the child is unhealthy. In other cases the child may be weak and flabby and there may be a distinct tubercular history, and in others there may be a history of injury.

He cites a case of a patient 18 years of age, who, sixteen years ago, fell and deeply cut the scalp. After a few days of illness the patient became dull, nervous, and irritable. His body afterward developed well and he progressed fairly well at school. A year ago he complained of severe headaches and quite severe vomiting for about three months and soon after the sight began to grow poor; six months ago the patient could not read and soon was not able to distinguish large objects. On ophthalmoscopic examination the refractive condition was found normal in each eye, the optic nerves were pale and clear cut but irregular, the veins were large and tortuous and the arteries small. There were several enlarged glands on either side of the neck. One brother died of consumption and the father has a so-called chronic asthmatic bronchitis.

### Notes on Extraction of Senile Cataract.

FERGUS, FREELAND, M. D. *(The Glasgow Med. Journal.)* Dr. Fergus objects to the preliminary iridectomy for three reasons, viz., (a) the eye is twice exposed to septic infection whereas only once when the combined operation is performed; (b) corneal astigmatism is in direct relation to the amount of cicatrization, therefore a large amount of astigmatism will follow two operations than one; (c) why unnecessary annoy the patient? He makes the incision entirely in the apparent sclera and cuts a large conjunctival flap which he folds carefully down over the cornea to be out of the way until the iris is excised and lens extracted. He then washes the lips of the wound clear of blood clot and lens debris and replaces the conjunctival flap. The advantages are that the conjunctival wound heals within a few hours and as soon as union is complete the deeper structures are protected from septic infection and the slowly healing sclero-corneal wound is thus made free from risk. The author thinks, however, that most failures after operation are due not to the particular method of operation but to septic infection from faulty preparation of patients or instruments. He gives in detail his method of operation.

### The Successful Treatment of Three Important Cases of Diseases of the Eyes by the Combined Method of Hydrargyrum and Potassium Iodide Internally and Pilocarpin Hypodermically.

BURNHAM, G. HEBERT, M. D. *(Canadian Practitioner and Reviewer.)* The first case was a chronic irido-cyclitis of $2^1/_2$ years duration with history of frequent relapses. The right eye was in the following condition: — V = 20/200, T +, pupil contracted and its margin held by fine posterior synechiæ and a large patch of exudation in the pupil. In the left eye there was no perception of light, the T —, the anterior chamber shallow, and a dull grayish homogeneous mass entirely covered the iris and pupillary area so that the iris could not be seen. The patient was treated at intervals of about one, two and three months, with the author's combined treatment. tA the end of about nine months, in the R. E. V. = 20/70, T normal; and the patch of exudation disappearing. There had been no relapse. In the left eye there was no perception of light, but the eye was clear, that is, the iris could be distinctly seen. The T was normal and there had been no relapse.

The second case was a chronic iritis in each eye with posterior synechiæ and a thin covering of lymph on the anterior capsule of the lens, so that vision was very poor. After two years of treatment the vision is much improved and the lymph disappearing.

The third case was one of specific trouble of four years standing which had already been treated with potassium iodide for nine months. There was complete paralysis of the left nerve which had suddenly occurred about one week before consulting the author. After eight weeks treatment under the combined method the diplopia could only be detected at a distance of ten inches from the eye and there was only a slight drooping of the lid.

Dr. Burnham applies this treatment in non-specific as well as specific affections and in cases of old iritis where the vision is poor from patches of organized lymph, he claims better results in vision than from operative measures. The author lays great stress upon the details of the administration, which as he gave in a former article are as follows: The strength of the solution of pilocarpin used is five grains to the drachm and the dose varies from $^1/_{12}$ to $^1/_4$ gr., hypodermic injections are given every day in groups of six to twenty-one days unless there be nausea, headache or oppression over the heart, when it is stopped for a few days. The largest group is the first and the intervals between the groups vary from three to eight weeks. Profuse perspiration with very full flow of saliva should follow. The patient should remain in bed two or three hours. The treatment should be continued so long as there is any improvement, even to three or four years.

### Excision of the Eyeball and Some Alternative Operations.

BULLER, FRANK, M. D. (*Montreal Med. Journal.*) According to Buller, Mules' operation of eviseration with the insertion of a hollow glass globe in the scleral cavity overcomes in a great measure all the advantages of an enucleation; the cosmetic effect is better both in regard to mobility and general appearance, there is no space behind the artificial eye for the accumulation of secretions and no consequent chronic conjunctival irritation. In those cases where the operation is followed by sympathetic ophthalmia, the original injury is usually of a sort that would in itself be likely to cause sympathetic ophthalmia. The writer has had only two failures in twenty-six consecutive cases and both of these were really cases in which evisceration was contra-indicated, viz., one a case of sympathetic panophthalmitis, the other a greatly shrunken eyeball. The author fully agrees with the statements of Beckiston that "excision is only necessary in, and its adoption should be strictly limited to (a) intraocular malignant growths and orbital malignant growths, (b) extensively lacerated or contused wounds of the sclerotic, (c) shrunken globes in which the uveal tract can not with certainty be completely removed, (d) cases where sympathetic diseases has already been excited. In *all* other cases evisceration with or without the insertion of a sphere should be done."

### Hereditary Optic Nerve Atrophy in Three Brothers Exposed to Lead Poisoning.

BUTTEN, RAYNER D., M. D. (*Ophthalmic Review.*) All three brothers were plumbers, all strong, healthy men. There were no symptoms of constitutional lead poisoning except in one who had a suspicious line on the gums of the upper jaw. There was no evidence of intracranial or other disease. Other members of the family showed no signs of atrophy; their work, however, was of a different kind. An acute neuritis in only one brother. The nerve atrophy was marked and showed no signs of improvement under treatment.

The author thinks them cases of hereditary optic nerve atrophy with lead as an exciting cause.

### Two Cases of Traumatic Aniridia.

ROWAN, JOHN, M. D. (*Ophthalmic Review.*) In the first case reported the right eye received a direct blow from a small piece of steel which flew off a hammer, five days afterward while pulling a steel stud out of a bolster, it suddenly flew out and struck the same eye. There was a small wound at the upper and inner part of the cornea. The anterior chamber was full of blood and he could only distinguish light from shade. After the blood in the anterior chamber had disappeared enough for an ophthalmoscopic examination, it was found that the entire iris was gone, leaving only the torn roots. The X-ray photograph showed no foreign body remaining in the eye. There were numerous small opacities scattered through the lens and a blood stained opacity on the anterior capsule of the lens. Fundus was practically normal. R. V. = 6/24; by placing in front of his eye a disc with a small central hole in it he reads J. 4; the disc does not help him for distant vision. The condition is explained as follows, the iris was injured or detached by the first blow, the second piece of steel cut the cornea and let the iris out.

The second had a history of a blow from a boot heel three days previously, two days after the accident, parts of the iris, which was protruding had been excised and the eye bandaged antiseptically. The eye was soft, full of blood and painful, and the sclera was ruptured at the upper and outer part. The patient was put to bed, a supporting bandage applied and the eye kept aseptic. As soon as details could be made out the iris was found almost entirely absent except for a small piece on the corner downward and inward. With proper glasses the patient sees 6/9. He requires + 10 ⊂⊃ + 2 ax. 75.° The case looked hopeless at first, but because a previous accident had caused the loss of the patient's other eye, the most conservative surgery was pursued.

### Ten Years Surgical Work in the Mission Hospital, Kasmir.

NEVE, ERNEST F., M. D. *(Indian Med. Gazette.)* Out of about ten thousand cases of eye operations those for trichiasis and entropion were the most frequent, there being over five thousand. The method used is a modification of Arlts: An incision is made on the conjunctival aspect of the lid near its free edge between the roots of the cilia and the openings of the meibomian ducts; care is taken not to wound the punctum; the incision passes through the lower part of the tarsal cartilage, thus dividing the lid into two parts. The anterior part contains the skin, orbicularis muscle, and lower margin of the tarsal cartilage, together with the eyelashes; the posterior part consists of the rest of the cartilage, meibomian glands and ducts and conjunctiva. The skin of the dorsum is then raised and an elliptical portion is removed corresponding to the whole width of the lid but not including the orbicularis muscle. The amount to be removed depends upon the degree of eversion required. The lower edge of the incision should come as near the eyelashes as possible. The upper and lower edges of the incision are united with three or more sutures. It is a rapid operation, and is usually performed without an anesthetic.

There is one peculiar condition discussed, which involves the whole pericorneal zone, consisting of firm swelling, injection and dusky discoloration, a chronic affection for which a peritomy seems to be the only remedy.

There were 629 cases of cataract extraction, four were glaucomatous of which the final result was poor in every instance. He prefers the modified linear incision with the section as nearly as possible in the corneo-scleral margin; if too peripheral there is great danger of loss of vitreous. Of 619 cases, no iridectomy was done in 160, in 12 of the series there was subsequent prolapse of the iris and in 12 others iritis occurred, followed in 6 cases by total occlusion. Not more than 25 per cent. presented eventually a really central pupil. Some accidents occurred when cocain was used from the patient giving a sudden jerk; in one case during the iridectomy the patient gave a sudden jerk and the whole iris came away. In two others part of the iris was detached. In the last 319 cases failure occurred in less than 4 per cent.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

By Robert L. Randolph, M. D.,

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AND

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## Quarter Ending June 30th, 1900.

### The Jequirity Treatment.

Masselon, J., *(Die Oph. Klinik,* 20 Mai, 1900.) The author reviews de Wecker's work in this connection and deplores the fact that this method of treating trachoma has lost many followers in the last few years, especially in Germany. He reminds us that jequirity is still extensively used in France, Belgium and in a number of other lands where the disease is endemic. He reminds us too as did de Wecker that the agent should only be used in those cases where the granulations are unaccompanied with marked secretion and that it should be avoided where there is any suppuration. It is a remedy which exerts its action particularly upon the cornea, hence its indication in pannus and sclerosing cloudings of the cornea. The remedy should always be freshly prepared, and should be pulverized and applied to the palpebral conjunctiva with a camel's hair brush just as we apply calomel. The lids should be well everted and approximated, so that the cornea is protected. The powder is allowed to remain in contact with the lids for two, three or even five minutes, and is then brushed off with a cotton mop soaked in a boric acid solution. If the reaction is not sufficiently strong the application should be repeated. But it is much better to get the desired reaction after the first application, as the reaction is less intense with every repetition of the agent, and one pronounced attack of jequirity ophthalmia is more apt to do good than several weak ones.

### A Case of Ophthalmia Produced by the Hairs of the Caterpillar. Ophthalmia Nodosa, Saemisch.

BAYER, DR., Erlangen. *(Münch. Med. Wochenschrift*, No. 21, 1900.) This rare ocular inflammation, which has been described by Saemisch under the name of Ophthalmia Nodosa, has recently been observed by Dr. Bayer in a workman. Some one threw a bundle of hay into the man's face, and the latter said that he had noticed a black caterpillar in the hay and that it had struck him in the eye. Immediately after the blow he felt great pain in the upper lid and rubbed it with his hand. The pain continued for some days and then ceased, but the eye remained very red. His vision being impaired he came to the author for treatment. There was slight photophobia and there was some injection of the lids and of the eyeball, especially near the corneal border. The cornea was unevenly clouded and its lower and outer quadrant was invaded by some conjunctival vessels. About 2 mm. from the outer border and 3 mm. apart there were found three yellowish white, sharply cut spots or areas each about the size of a pin's head. Several small nodules of a similar character were seen in the periphery of the iris. The anterior chamber was somewhat flatter than usual. The pupil was narrower and did not react. The iris was thickened and was discolored, being of a greenish hue. The condition was treated with atropin and bloodletting and after a long time recovery took place. After the cornea cleared up there was seen in the lower quadrant and deep in the tissue a yellowish white point with brown border and about the size of the head of a pin. From this point there ran out a process blackish brown in color and about 1 1/2 mm. in length. Examination of the process with the corneal microscope showed it to be a caterpillar hair. The same nodules which were seen in the earlier stages of the affection were still present and unchanged in size, and this fact was in the author's opinion strong reason for believing that the disease was the affection known as ophthalmia nodosa. Had the nodes been of either a tuberculous or of a syphilitic character they would have undergone some change, probably in size, or they would have broken down. Of course the discovery of the hair was convincing proof of the correctness of the diagnosis. The case differs from most of those which have been described in that the nodules developed in the iris and cornea, while the conjunctiva and sclera were free. In a large majority of these cases the disease has its seat in the superficial layers of the anterior part of the eyeball, and only after a considerable length of time does it pass into the deeper structures, following the course taken by the hair. Seldom do we see the hair driven at once into the deeper parts of the eye, but these work their way (wander) into the deeper parts gradually. The author then goes on to describe the treatment which will be found in the earlier works of Eversbusch on this subject.

### Iridodialysis Caused by a Shot from a Revolver.

BALLABAN, DR. THEODOR, Lemberg. (*Centralblatt für prak. Augenheilk*, März, 1900.) The author reports an interesting case of wound from a revolver bullet which penetrated the orbit for a short distance, just below the supraorbital arch. Among other changes, the bullet produced a well marked iridodialysis at the upper and inner border. It may be said here that the eyeball had not been penetrated. The case reminded the author of the various explanations offered for the existence of such conditions, among others that of Schmidt-Rimpler, which is this. By the action of a blunt force the sclera is driven or turned inward and traction is thereby exerted upon the iris root at this point.

Berlin has showed that the pupil in the case of injury always contracts. These two forces acting together, namely the contraction of the pupil from below and the traction upon the iris root resulting from the driving in of the iris, leads to the separation of the iris from its ciliary attachment. Foerster's theory is that the force acting upon the centre of the cornea flattens and drives in the latter. The aqueous humor is dislodged and cannot find its way into the posterior chamber as the lens is forced right up against the iris, hence it (aqueous) is forced up into the filtration angle at a point where the iris lacks the support of the lens and in this way the iris is pushed away from its attachment. The author discusses these theories in their application to such cases as he has seen and comes to the following conclusions. 1. The force must be a rapid one and must strike the corneo-scleral border. The conditions for iridodialysis will be rendered more favorable if the sclera is elastic, as is the case in young people. The action of a blunt force upon the corneo-scleral junction is to drive in the latter and thereby the iris root is forced towards the middle point of the eye and at the same time a contraction of the pupil is produced. If the force is at work for only a moment the corneo-scleral border from its own elasticity resumes its normal position at once, although it may be more markedly curved at this point than normally. The iris when it recedes is stretched and torn away simply because it cannot follow owing to the lesser elasticity of the sclera, consequently it tears at the root at a point exposed to the greatest traction, which point corresponds to the less resistant part of ths iris. The presence or absence of rupture of the zonula or the rupture of the latter without dialysis can be explained by a different direction or localization of the force at work and of course by the varying extensibility of the parts, which differ in different individuals.

### Spring Catarrh in Russia.

NATANSON, ALEXANDER, Moscow. (*Klinische Monatsblt. für Augenheilk.* April, 1900.) The author gives us a very interesting and exhaustive history of this disease as it is seen in other countries than Russia, and reports three cases which came under his own observation. His observations may be summarized as follows: The disease is rarely seen in Russia as compared with its occurrence in other lands, that is to say with countries which have a more temperate climate. The temperature, however, by itself is by no means the determining factor in bringing about spring catarrh, but rather the peculiarity of the climate, as, for instance, its dampness, weather conditions, etc. This is evidenced by the fact that the southern parts of Russia, which lie in the same latitude with Italy and Constantinople, show a relatively smaller percentage of cases than do either of the last two named regions. It may be inferred from this that the climate of Russia which is characterized by intensely cold winters and by hot and dry summers is unfavorable to the existence of spring catarrh. Natanson discusses the diagnosis and treatment of this interesting affection, but he adds nothing new to what we already know of these features of the subject.

### A Case of Blenorrhoea Neonatorum Produced by the Pseudoinfluenza Bacillus.

NEDDEN, DR., (*Klinische Monatsblt. für Augenheilk*, März, 1900.) The author's observation was made in the eye clinic of Bonn. It appeared that the infant's right eye had swelled up soon after birth. There was present profuse secretion. This kept up for several days, when the other eye was attacked. When seen, the picture was a typical one of ophthalmia neonatorum and naturally a gonorrhoeal infection was suspected. Careful bacteriological examination, however, failed to show any gonococci, but on the contrary there was discovered the pseudobacillus of influenza, the characteristic evidences of which consisted in the various involution forms which it took on when cultivated on human blood-agar, i. e., agar plate covered with a layer of sterile human blood. The author was unable to trace the infection to the mother, and he concluded that it was probably an infection which had its origin in the midwife who had charge of the woman during labor. He calls attention to the fact that infants are peculiarly susceptible to infection with this organism as is shown by the investigations of Hartmann, Kossel and others. The former observer found that in cases of otitis media suppurativa in infants more than half show that the inflammation was caused by the pseudoinfluenza bacillus. Nedden treated this case in the usual way, and while the condition proved obstinate it ultimately yielded and the child was discharged cured.

### Extirpation of the Superior Cervical Ganglion of the Sympathetic Nerve in Glaucoma.

MOHR, DR. M. (*Klinische Monatsblt. für Augenheilk*, März, 1900.) Mohr makes an interesting report upon three cases of glaucoma where this operation was performed. In all three cases narrowing of the pupil and lowering of intraocular tension was observed. In one case the tension went down below normal, but it remained there only a short time, when it returned to the normal where it staid. Marked widening of the field was observed. Unpleasant effects were not observed in any of the cases. While the effect of the operation is undoubtedly beneficial, and while it will probably find a field for usefulness in certain forms of glaucoma, it is as yet too soon to speak positively as to its relative value in the treatment of glaucoma.

### The Etiology and Treatment of Strabismus.

WOLFFBERG, DR. (*Wochensch. für Therapie und Hygiene des Auges.* No. 30. 1900.) The author reviews the works of Priestley Smith and Landolt in this connection. He regards long continued spasm of the accommodation as the most frequent cause of strabismus, this spasm of the accommodation being engrafted upon the child at a very tender age, and as a rule being associated with hyperopic astigmatism. For many years Wolffberg has been in the habit of treating such cases from the very commencement of the squint with atropin, and he says that he has cured in this way a large number. He generally commences by instilling the atropin into the squinting eye once a week, and then he follows the suggestion of Priestley Smith and Landolt and exercises the weaker muscle. Stereoscopic exercises are ordered, and as soon as possible glasses. If these measures do not suffice an operation is undertaken, but never before the sixth year of age unless the squint is of a very high grade. The operated eye is kept under a bandage, for one day, when it is removed and a piece of his protective paper is put before this eye very much in the fashion of a pair of glasses, and at the external angle a small peep-hole is made and through this the patient is required to look so that the eye is pulled outward as far as possible, and thus the effect of the operation is heightened.

### The Etiology of Cataract.

JONAS, DR. E. (*Extracted from Wochenschrf. für Therapie und Hygiene des Auges.* No. 30. 1900.) The author claims that cataract is a reflex affection having its origin in disease of the nares, and that in all the cases of cataract which he has examined he found in the nares similar changes and at the same point. Furthermore he ascertained that as a rule others whom he questioned in regard to this matter and who were afflicted with cataract had also some nasal affection or had been under treatment for nasal trouble. A clouding of the lens can be produced by diseased processes acting upon either the N. trigeminus or upon the fibres of the sympathetic. The author is inclined to the opinion that sympathetic fibres are chiefly concerned, and that the cataract is really a trophic disease of the lens due to pathological changes in vasomotor nerves. Independently of injuries and constitutional affections, a slowly developing nasal trouble with existence of changes at a certain point constitute the conditions necessary to the formation of cataract. Cataract is especially frequent in diabetes mellitus, and the latter disease, according to Jonas, is frequently of a reflex affection of nasal origin. In all his cases he found marked hypertrophy of the nasal mucous membrane. These cases, however, were only regarded as mild cases of diabetes, and he has not yet had time to decide what effect the treatment of the nasal affection will have upon the diabetes. He is of the opinion that cataract is apt to develop in diabetics who have disease in the middle turbinate bone, and he locates the reflex point for cataract on the anterior border of this bone. In all these cases he found marked changes in this region consisting in mal-position of the turbinate bones, hypertrophied areas, fibrous proliferation of the soft parts all of which conditions by compression of the nerves and vessels bring about obliteration of the same. The author thinks that the treatment of the nasal affection in the early stages of cataract ought to be successful in relieving the latter condition.

### A Case of Sympathetic Ophthalmia Complicated with Inflammatory Glaucoma.

ALEXANDER, DR. L., Nurenberg. *(Die Ophthalmolog. Klinik.* April, 1900.) The case reported by Alexander was that of a man sixty-one years old. In one eye there existed first of all the usual picture of primary glaucoma. After the first operative measure (anterior sclerotomy) there was apparently no improvement, indeed elevated tension soon after set in, and then an iridectomy was performed. Later there developed in the good eye an iridochoroiditis which he regarded as sympathetic in nature, and not an idiopathic affection. The glaucomatous eye was finally enucleated, as all operative and other measures had failed to relieve. The anatomical examination showed extensive infiltration of the entire uveal tract, which strengthened the hypothesis that the affection in the other eye was of a sympathetic character. It should be remembered, however, that the glaucomatous eye was opened twice, once for the sclerotomy and once for the iridectomy, and so the opportunity for infection was given. The sympathetic affection broke out nine weeks after the first operation and six weeks after the iridectomy. The interesting point about the sympathizing eye was the appearance of glaucoma in it. While the sympathetic inflammation was characterized by the presence of synechiae they were not sufficient to interfere with the communication between the two chambers of the eye, so the existence of the glaucoma could not be attributed to such a reason. The auther thinks that this eye just like its fellow was predisposed to glaucoma, and that this predisposition was increased by the necessary employment of the atropin on the outbreak of the sympathetic disease. The glaucomatous condition was treated with eserin and improvement resulted, but this was immediately followed by a fresh outbreak of irritative symptoms on the part of the iris, as was shown by new synechiae. Mydriatics were again found necessary. This condition went on for days, alternating now and then with periods of high tension, which were completely controlled by eserin. The symptoms finally disappeared, and when the patient was discharged a few weeks later his vision was 6/9ths.

### The Treatment of Scrofulous Eye Affections.

HEDDAEUS, DR., Essen. (*Wochenschr. für Therapie und Hygiene des Auges.* No. 30, 1900.) The author calls attention to the very common use of yellow salve and calomel in this class of eye diseases, and when we consider the efficacy of these agents we are led to believe that they must have some specific action in scrofulous affections of the eye. For some time past Heddaeus has been in the habit of using calomel internally, especially in phlyctenular conjunctivitis and blepharitis and with marked benefit. He generally prescribes as many milligrammes a day as the child is months old and in older children a centigramme for each year, that is to say up to five years. Of course due precautions should be used as to toxic effects. The author also suggests the use of the gray salve (0,5—1,0) to be rubbed in once daily, better after a bath, and to be applied to either the back or thigh.

### Dionin and Cataract Extraction.

WOLFFBERG, DR., Breslau. (*Wochenschr. für Therapie* *und Hygiene des Auges*, 3 Mai, 1900.) It will be remembered that this author has written not a little about the value of dionin in ocular therapeutics, an agent which through its effects upon the lymphatics hastens the closure of the wound, and by increasing the vitality of the corneal tissue renders it less susceptible to infection. He has made it a rule of late to use dionin after cataract extractions. Recently, however, he reports a case where the effects were anything but pleasant. It appears that some of the conjunctiva was torn with the fixation forceps. The dionin was applied in the usual way on the completion of the extraction. A few hours later great chemosis of the conjunctiva appeared and the lids and that side of the face became enormously swollen. The cornea and iris, however, showed not the slightest participation in this process. It must be said, too, that all these phenomena were accompanied with great pain. This condition persisted with varying intensity for three days. The visual result of the operation, however, was not impaired. Wolffberg attributed these symptoms to the dionin having gotten into the tear in the conjunctiva and having exerted its specific action in the subconjunctival tissue.

### Value of the Corneal Suture.

KUHNT, PROF., Königsberg. (*Zeitschrift für Augenheilkunde*, April, 1900.) The author speaks of the primary and secondary corneal suture. In the first catagory is to be understood the immediate prophylactic or curative insertion of the suture in order to better promote cleanliness of the edges of the wounds whether the latter be due to injuries or to operative measures. By secondary suture is understood the employment of a suture a considerable length of time after an injury or after an operation when in either case there has been imperfect or retarded healing of the wound. In cases then which are to be operated upon the writer regards the corneal suture as valuable: 1. Where the patient suffers with bronchitis, emphysema or heart disease, conditions which so often lead to physical disquiet. 2. Where the patient is very corpulent or helpless and consequently where there is always some physical shock with every movement of the body. 3. In cases of complicated cataract. 4. When the patient has only one eye. 5. Where the patient is weak minded, imbecile, or where for some reason or other an anaesthetic cannot be administered. 6. When for other reasons complications in the healing process are to be expected or where there is escape of vitreous. 7. In cases of chronic nasal affections. 8. In cases where there is either a chronic ozena or an otorrhea or in fact in any case where there is a running wound. 9. In cases where it is necessary to make an unusually large corneal incision. 10. In case of serious injury where there is a large gaping wound the author advises the insertion of one or more sutures after the edges of the wound have been freshened and he claims to have secured thereby a marked shortening of the healing process, to have avoided an outbreak of cyclitis and to have obtained some vision.

Finally as regards the secondary corneal suture it is evident that the conditions which are present in such cases are far more unfavorable. We have here eyes which have usually been diseased for a long time and which have been regarded as more or less lost eyes. In eyes, for instance, which have been seriously injured the sutures have tended not only to preserve the shape of the eyeball but even to save some sight. As a rule in the primary corneal suture he passes the suture only through the upper half of the corneal thickness while in the secondary corneal suture he always includes some of the conjunctiva in the suture. This will have the effect of not anly strengthening the walls of the opening but will prove an additional obstacle to infection.

### A Gnat in the Nasal Duct.

WOLFFBERG, DR., Breslau. (*Wochenschrift für Therapie und Hygiene des Auges.*, No. 39, 1900.) The patient was a woman 40 years old. She had suffered with fistula of the tear sac for many years and presented the typical picture of that disease. She had been under treatment for a long time but everything which had been tried proved of no avail. The tear sac was then extirpated and for several days subsequently there was quite a profuse discharge of pus from the canal. On one occasion strong pressure brought out a good deal of pus and along with it a blackish looking object which proved to be an insect with white and black stripes around its body and about 8 mm. long and with short wings. With the removal of this insect the suppuration stopped at once and six days later the patient was practically well. It is not supposed for a moment that the gnat caused the original trouble but it was undoubtedly responsible for the post operative suppuration, that is to say for the profuse discharge of pus following the extirpation of the sac. The author inclines to the belief that the gnat got into the nares a few days before the operation and found its way from thence into the nasal duct.

### The Part Played by Bacteria in Neuroparalytic Keratitis.

OLLENDORF, ARTHUR, Neumarkt. (*Archiv. für Ophthalmologie*, Bd. XLIX, Ab. 3.) The author has gone over this subject in a most interesting manner and has made it the subject of an experimental study. His conclusions may be summed up as follows: 1. The keratitis which is observed in animals after section of the trigeminus and where the animal has not been protected from external injuries is attributable to a traumatic infection, usually with a staphylococcus which is a regular inhabitant of the normal conjunctiva. 2. In the case of an animal which has been protected from injury after section of the nerve the keratitis is secondary and is a reaction traceable to the drying of the cornea lying exposed in the palpebral space. The few bacteria which are lying on the surface of the cornea have probably nothing to do with the keratitis, for it has been shown that simply drying of the cornea can lead to the keratitis. 3. The results obtained in the case of rabbits can not be said to apply exactly to what is seen in human beings. While keratitis may follow in the case of human beings after paralysis of the trigeminus still this is more or less dependent upon individual peculiarities and is by no means constant as is the case with animals. Most of the cases which are seen in human beings are to be traced to infection after mechanical injury of the cornea. 4. Some of the symptoms which have been observed after section of the trigeminus lead one to think that vaso motor disturbances take place in the eye though it can not be said that these disturbances have anything to do with producing the keratitis.

### An Experimental Study of the Action of Eserin upon the Circulation of the Eye.

GRONHOLM, V., Helsingfors, Finland, (*Archiv. für Ophthalmologie*, Bd. XLIX, Ab. 3.) The property of eserin of lowering intraocular tension in glaucoma is well known, though how this phenomenon is brought about is somewhat of a mystery and the same may be said of the effect of eserin upon the normal eye. The author has given us a long and exhaustive study of the subject and has even taken up the historical aspect of the question. He discusses the "iris theory," the "bloodvessel theory," and lastly the theory which attributes the lowering of intraocular tension to the effect of eserin in producing a stretching of the uvea, "Die Uvealspannungs theorie." His experiments were made for the most part on rabbits and cats. His conclusions as to the effect of eserin upon the glaucomatous eye are as follows: The effect of eserin upon the normal eye is to lower intraocular tension. A transient elevation of tension precedes the lowering of tension and this is to be attributed to a hyperemia caused by the irritative action of the eserin. This lowering of tension is explained by the fact that the quantity of blood in the eye is lessened and the secretion diminished. The lessening of the quantity of blood in the eye is due to the contraction of the intraocular bloodvessels. The filtration capacity of the eye is not primarily changed by the eserin. The contraction of the pupil does not stand in any causal connection with the lowering of intraocular tension. The contraction of the ciliary muscle and the stretching of the choroid produce no change in either the filtration capacity of the eye or in the tension of the eye. In those cases of glaucoma where the iris is pressed forward eserin acts by lessening the quantity of blood and the secretion, and in consequence the iris and lens draw back from the cornea and thus the filtration channels are opened. The effect of eserin upon filtration is not a direct effect but an indirect one.

### The Entrance Into the Interior of the Eye of Soluble Substances After Subconjunctival Injections.

VOGEL, H., DR. (*Archiv. für Ophthalmologie*, Bd. XLIX, Ab. 3.) The author has busied himself with a question which has aroused no little speculation among clinicians for several years. The question may be put as follows: Is the good resulting from a subconjunctival injection to be attributed to the chemical properties of the injection? He uses in his experiments Hydrargyrum bichloratum, Hydrargyrum cyanatum, Hydrargyrum formamidatum and Hydrargyrum amido-bichloratum. The injection was made from 3·5 mm. from the conjunctival limbus. These are the results of his experiments. The percentage of mercury found in the aqueous after a subconjunctival injection (usually a 1 per cent. solution) was less than 1:100,000 and it is not likely that a solution of this strength can have much therapeutic value and so long as experiments point to the limited properties of diffusion possessed by the mercury salts it is necessary to conclude that the chemical properties of the injection have probably little to do with the good which often follows.

### Conjunctival Asthma.

ROSENBACH, PROF., Berlin. (Extracted from *Wochenschrift für Therapie und Hygiene des Auges*, N. 36, 1900.) Rosenbach thus describes what he calls conjunctival asthma. He has seen five cases. The affection is characterized by intense hyperemia of the conjunctiva especially of the upper lids. In all of the cases the subjects were plethoric and between forty and fifty. The hyperemia comes on periodically or it may become more intense periodically and is often associated with hyperemic conditions of the nasal mucous membrane. The chief symptoms are pronounced feeling of weariness and a heaviness about the head. Want of rest but inability to sleep. Periods of depression associated with anxious thoughts and there is often a sense of constriction about the neck and chest with frequent sighing. In short there are found all the symptoms of a highly nervous state. The affection defies the usual local treatment. The instillation of a weak solution of cocain does more good than anything else but the relief is only temporary. Independently of the history, that is to say of the periodicity of the attacks and of the accompanying nervous phenomena, the diagnosis can only be made from the ineffectiveness of the usual local remedies for conjunctivitis and from the rather remarkable effect of cocain. The author is unable to say whether the condition is in any way indicative of cerebral hyperemia but he is decidedly of the opinion that disturbances in the intestinal tract, hemorrhoids, etc., may be factors.

### The Diagnostic Value of Scleral Puncture in Sarcoma of the Choroid.

SCHULZ, PAUL, DR., Berlin. (*Klinische Monatsblt. für*

*Augenheilk.*, Mai, 1900.) The author discusses the difficulties often attending the diagnosis of sarcoma of the choroid, and after speaking of the scleral puncture which has been recommended by Hirschberg and others reports the following case. The case was a man fifty-six years of age who had a detachment of the retina on the nasal side. The tension of the eye was similar to that of the fellow eye. There was no glaucomatous tension on the instillation of atropin. While the diagnosis of tumor was decided upon, a test puncture was made in the following manner and for the purpose of confirming the diagnosis. A Pravaz syringe was used and the needle introduced at such a point into the eye as to strike the growth. On passing the needle in a brownish red fluid was aspirated. This fluid was found to contain red and white blood corpuscles and granular detritus, but there were no characteristic tumor cells.' It is evident that the method possesses little diagnostic worth and it cannot be regarded as a perfectly harmless procedure for we run the risk in drawing out the needle of introducing some of the tumor cells into the conjunctiva and thus multiplying the dangers of a local recurrence. It may be noted in connection with this subject that Hirschberg who at one time was a friend of the method no longer recommends it.

### The Treatment of Suppurative Dacryocystitis with Soluble Bougies.

STEINITZ, DR., Cöslin. *(Klinische Monatsblt. für Augenheilk*, Mai, 1900.) Steinitz has been treating suppurative dacryocystitis with medicated bougies very much after the manner recommended by Hotz, Schweigger and others. He introduces into the sac what he calls salve-rods (Salbenstäbchen). These are 3 mm. long, and 1 mm. thick and are made of cocoa butter and any other medicament which suits the fancy of the doctor. Steinitz generally adds protargol 5 per cent. and argentum collo-idale 1 per cent. A straight silver tube with a diameter of 1 mm. is then introduced into the canaliculus and from thence into the sac and through this tube the medicated rod is forced usually with a small sound. He reports a number of cases successfully treated in this manner.

### The Regressive Disturbances in the Nutrition of the Eye in Ribband Like Clouding of the Cornea.

BEST, DR., Giessen. *(Beiträge zur Augenheilkunde,* Heft 43.) While the phenomena of inflammation have been extensively studied experimentally in the cornea, degenerative changes in this location have attracted the attention of investigators to a very limited degree. The so-called ribband like corneal clouding developes generally after a deep seated and destructive process in the eye and is the terminal event of a chronic uveitis. Rarely is the affection primary. The disease must be regarded as the typical expression of the lowered vitality of the cornea. Best speaks of two kinds of ribband-like corneal clouding first the primary which consists of a clouding of the cornea (double) beginning in the middle or starting from both sides and traversing the cornea without vascularization. The primary form is found exclusively in old persons and is due to diminished vitality of the cornea dependent upon advanced age and we have in this form of the disease perhaps a nutritive disturbance of vascular origin.

The secondary form of which Best writes, is quite often observed after a chronic iridocyclitis with either occlusion or seclusion of the pupil, in children after meningitis where an eye has been involved and has undergone shrinkage and most frequently after perforating wounds of the eyeball. A typical picture of this variety of corneal clouding consists in a ribband like clouding which passes across the cornea somewhat below the equator having a breadth of from 2-4 mm. and in its earlier stages well within the corneal limbus. The position corresponds to the palpebral opening and the influence of this opening upon the causation of the trouble is undoubted. As a rule the cornea in other locations is clear. The appearance is quite characteristic. The ground color is grayish-white and on top of these are to be seen lines and white points. The epithelium can be smooth and glistening though as a rule it is dull. The seat of the clouding is under the epithelium but as the disease progresses the epithelium may be attacked. The formation of bloodvessels in the vicinity of the clouding is never seen and pericorneal congestion is absent. Some times there is a slight degree of corneal anesthesia. The secondary form as would be supposed is generally monolateral. This is the clinical picture which Best gives us. He then goes on to describe minutely the pathological anatomy of the disease as based upon an examination of nine cases. He closes his exhaustive paper with these remarks. The ribband like clouding of the cornea is really the reaction of a cornea (with already impaired powers of nutrition and reaction) to external influences to which the uncovered portion of the cornea is exposed. Histologically we have a tissue change consisting in the new formation of sclerotic connective tissue beneath the epithelium, by a breaking down of Bowman's membrane and finally by the formation of calcareous and homogeneous organic concrements. The latter are the results of a coagulation necrosis, it may be of the albuminous bodies in the lymph streams of the cornea, it may be of the corneal tissue itself, as for instance of Bowman's membrane. This coagulation necrosis which shows itself in the form of fine bodies having a fibrin reaction undergoes a two fold change, either calcification or hyaline degeneration. As regards the intraocular changes in this disease there was found a marked increase in the "Mastzellen" and there was established the presence of glycogen and finally the usual changes in eyes which are the seat of phthisis.

### Iodic Acid, Gallican and Iodogallican in the Treatment of Trachoma.

SCHIELE, A., DR. (*Centralblatt für prak. Augenheilk.*, April und Mai, 1900.) The author lives in a region where thirty per cent. of the eye cases are affected with trachoma. He examined the children in seventeen schools and found among 1500 children, fifty-three per cent., affected with trachoma. For a long time he has used a preparation consisting of iodin and vaselin in the treatment of this disease but becoming dissatisfied with what appeared to be the tediousness of the recovery he has taken up iodic acid. He employs the agent in two forms or sticks. Each stick has a different consistency, one being somewhat softer than the other. The softer stick consists of pure iodic acid while the harder one contains fifteen parts iodic acid and one part gum arabic. The trachomatous areas are everywhere touched with one of these sticks. Unless cocain be used the pain is intense but bearable and is transient. On touching the mucous membrane it will be noticed to turn dry and take on a brownish color. The treatment leaves no scars. He has also used five per cent. solutions of iodic acid in all forms of trachoma. It is applied with a camel's hair brush. When dropped into the eye it should be prescribed in from one to three per cent. solutions. A solution stronger than three per cent. should not be given to the patient to use. In pannus he usually employs the iodic acid in the form of a salve, and this salve should be no stronger than one and a half per cent. and it should be mixed with lanolin to which a little almond oil may be added and in order to make the resorption capacity of the cornea greater a few drops of cocain should be dropped into the eye beforehand or a little cocain may be added to the salve. The treatment of trachoma with these various preparations of iodic acid is sometimes rendered more effective by the internal administration of iodid of potash. As a general thing treatment should be kept up till complete recovery results, that is to say from one to two months and in the so called dry form of the disease a longer time will be required. Gallican. This is white powder and is readily soluble in hot water. The author usually powders the affected areas with the gallican and has used it with success in the commencing stages of trachoma and also in the cicatricial stage of the disease. It is to be used once or twice daily.

Iodogallican. This is a dark gray powder insoluble in water. It contains 38.4 bismuth and 23.6 iodin. It is also used in powder form and has a slightly cauterizing effect. It has a particularly happy effect upon both superficial and deep infiltrations of the cornea and heals up an ulcer in a remarkably short time and this may be due to the drying effect which it has upon the floor of the ulcer and partly to its antiseptic property. Marked irritative symptoms contraindicate its use.

### Tuberculosis and Sympathetic Ophthalmia.

PETERS, PROF., Bonn. (*Zeitschrift für Augenheilkunde*, Mai, 1900.) The idea which pervades this communication is that sympathetic ophthalmia is probably tuberculous in its nature and is not (as has been shown by a number of observers) caused by one of the pyogenic organisms. He calls attention to the fact that in a hospital in his city among ten thousand injured at least five hundred showed tuberculosis at the site of the injury and this was seen more frequently in the case of slight injuries where disturbances in function were comparatively trivial. In a number of cases this so-call post traumatic tuberculosis was the first apparent manifestation of the disease and this high percentage of cases leads Peters to think that there is no organism which is so likely to take root, so to speak, and to grow at the site of an injury as the tubercle bacillus. He then goes on to report the case of a woman who had an attack of iridochoroiditis of the left eye accompanied with a sero plastic exudation. Under the mercurial treatment the trouble disappeared. Syphilis could be excluded. Six years later the patient presented herself with an irritated condition of the same eye, seclusion of the pupil and bulging forward of the iris. Glaucomatous symptoms being present and iridectomy not being practicable transfixion of the iris after the manner of Fuchs was practiced. This had the effect of putting a stop to the existing symptoms but phthisis set in. Three months later iritis serosa set up in the other eye accompanied with vitreous opacities and hyperemia of the papilla. This condition grew better but was followed by the formation of exudates upon Descemet's membrane and of a grayish-yellow exudate in the anterior chamber. Under the influence of pilocarpin and mercury these changes disappeared but later on there appeared in the parenchyma of the cornea four localized infiltrates each about the size of a pin's head. The vision at this time was restricted to counting fingers at eight feet. The author rules out everything but tuberculosis and then discusses the bearing of this disease upon the causation of sympathetic ophthalmia. He seems to think that irritation of the ciliary nerves just as we find after injuries of the eye could bring about conditions favorable to the colonization and multiplication of the ubiquitous tubercle bacillus, and he ventures the opinion that many cases of chronic insidious iridochoroiditis with blindness and lowered tension following either an injury or an operation may rest upon a tuberculous basis.

### A Case of Multiple Melanosarcomata with Peculiar Complications of Both Eyes.

WAGENMANN, A., PROF., Jena. (*Deutsche Med. Wochenschrift*, 1900, No. 16, page 262.) In a man of 28 years with multiple bluish black tumors, of 3 to 4 cm. in diameter, in and under the skin all over the body, a severe iridocyclitis of left eye occurred with increased tension and formation of a flat, crescentic, pigmented tumor at the sinus of the anterior chamber. V = fingers at 2 m.; opacities of vitreous. Iris light blue. Under treatment with pilocarpin, warm applications and arsenic internally, the brown deposits at Descemet's membrane and the opacities of vitreous were absorbed, the inflammation and increased tension ceased and the tumor entirely disappeared. The ophthalmoscopic examination revealed a retinal hemorrhage near the macula lutea. The iris had turned grayish brown. V = 7/7.5. The melanosarcomata of the skin grew in number and size. After 7 months again intense ciliary injection of left eye. Posterior surface of cornea covered with hundreds of minute, dark-brown well defined pigment spots. Fresh numerous opacities of vitreous. Also in the right eye brown pigmented opacities of vitreous. No hemorrhages. The inflammation of left eye gradually subsided, but the pigment deposits remained unaltered. W. considers the eye affection as metastatic. The relapse apparently was due to a formation of a new tumor somewhere in the eye, probably the ciliary body, from which a dissemination of pigment started all over the eye, especially the anterior chamber. In the right eye the tumor cells must have entered the vitreous from a point in the interior, hidden from view. The small, brown pigmented flocculi were either conglomerations of pigment or particles of free pigment.

### On a Novel Method of Examining the Background of the Eye in the Erect and Inverted Images with a New Electric Ophthalmoscope.

WOLFF, DR. HUGO, Berlin. (*Berlin. Klin. Woch.* 1900. No. 16, page 344.) The illuminating apparatus consists of an electric lamp (12 Volt) and a convex lens (40 D.). both placed in a tube, which serves as handle. A totally reflecting prism reflects the light through the hole of a Recoss disk into the eye. W. claims as chief advantages: The pupil of the observer can be brought into the anterior focus of the observed eye (15 mm.). The ophthalmoscopic field is the largest possible and also the illumined area of the retina. The required intensity of illumination is very small, so that no contraction of the pupil follows. The ophthalmoscopic picture appears in bright color, free from the annoying corneal reflex. This method inconveniences the patient less and is more rapid than the ordinary one. It is of especial value for medical ophthalmoscopy at the bedside, as the patient remains in his recumbent position and looks towards the ceiling, while the physician bends slightly over his face. For further details the original must be referred to.

### A Cilium in the Anterior Chamber.

OPPENHEIMER, DR. E., Berlin. (*Deutsche Med. Woch.* 1900, No. 20, p. 328.) The history revealed that a piece of wire flew against the eye 20 years ago. Some time afterward a cilium was noticed in the anterior chamber. When O. saw it the hair did not show any signs of maceration, except loss of pigment. The point lies upward and toward the temple in the sinus, the root downward toward the nose, the stem is free. Movements of the pupil upon light and accommodation cause a slight displacement. It remained there 20 years without creating any symptoms, and therefore was left alone.

### On the Infleunce of Poisons on the Motor Apparatus of the Eyes.

GUILLERY, DR. H., Coeln. (*Pflüger's Archiv für die Gesamte Physiologie,* Bd. 77, 1899, p. 321-404.) G. studied the influence of alcohol, morphin, chloral hydrat, paraldehyde, sulfonal, trional, cocain, ether, chloroform, coffee and tea, on the movements of his own eyes, associated as well as for divergence, convergence, accommodation and those of the pupils. He employed a method, devised by him (in Vol. 71 and 73 of Pflüger's Archiv) for measuring the rapidity of the ocular movements, on the principle that a line of a certain length, illuminated from one end to the other during a short interval of time, creates an after image on the retina in the same direction when at rest. If the eye moves to the side, the after-image of a vertical line will be inclined and from the angle of inclination the rapidity of motion can be calculated. If this is ascertained for the most energetic effort of a person, any pathologic diminution of function may be noticed by this method, which thus serves as a dynamometer, as it were, for the ocular muscles.

In all experiments with alcohol, a paralytic effect was observed, on some muscles sooner than on others. The abduction is first diminished without any noticeable weakness of the interni muscles, and the disturbance of fusion remains longest. The restitution to the normal recurs earliest in the muscles least affected.

Morphin weakens the exterior muscles and among these most the interni, excites the sphincter pupillae and the abduction power, leaving the near point of fusion and the accommodation unaltered. The recession of the far point of fusion is not due to an insufficiency of the interni, since it persisted after the function of the latter had returned to its normal condition.

Chloral hydrate has a paralytic influence, even in small doses in comparison to its hypnotic action, causes mydriasis of short duration, and lessens the power of adduction and abduction. Only maximal doses of paraldehyde reduce the rapidity of contraction of the ocular muscles. Sulfonal is uncertain in its action, but in some experiments it soon paralyses the interni, not the externi, and transitorily the abduction power in spite of the integrity of the externi. Trional acts in a similar manner. Cocain leaves the ocular muscles intact, (except mydriasis). Ether and chloroform benumb the associated motions and the power of fusion. Stimulants, as coffee and tea, showed no actions on the muscles of the eyes.

G. found as the chief result a perfect independence of associated and accommodative movements, as the motor apparatus of these functions was very differently influenced by the toxic substances. Their action must, therefore, be partly a central one, since a diminution of the function of the peripheral apparatus alone would always have the same consequences. In some instances the power of fusion was normal or increased, whereas the rapidity of the exterior movements was diminished, and vice versa. The observation of an isolated action on the power of divergence led G. to assume, as well as from other reasons, a special centre of divergence.

### On the Influence of Poisons on the Fusion Movements of the Eye.

GUILLERY, DR. H., Coeln. *(Pflüger's Archiv für die Gesamte Physiologie,* Bd. 79, 1900.) The occurrence of circular rotations of the eyes for maintaining binocular vision were first studied by von Helmholtz with a combination of 2 isoceles and rectangular prisms, then by others with the stereoscope, and the employment of haploscopic images with parallel visual lines. G. investigated with the stereoscope, showing 2 identic charts of print, the physiologic circular rotation of his own eyes, and then the pathologic deviations produced by alcohol, chloral hydrate, morphin, sulfonal, trional, ether, chloroform, excluding those poisons which in his former experiments on the ocular movements had yielded negative results. The experiments were made in the following manner: The printed chart before the right eye, while fixating the words of the left half of a line in the centre, was gradually rotated outward, until the letters overlapped each other, i. e. diplopia occurred and could not be fused any more. G. found in 400 tests that his right eye reached this stage, after a rotation of 6.61°. Before the poison was taken the average of 10 such measurements was noted, and also after ingestion every 10 minutes. Besides that the near and far point of fusion were ascertained, as in the former experiments, and with the same results. Alcohol lowers the powers of circular rotation, (in one series of experiments from 6.61 to 3.15 after 35 minutes). Morphin stimulates the circular rotation, in one series to 17.75, 40 minutes after a subcutaneous injection of 0.01 hydrochlor. of morphin. It returns sooner to the normal condition than the increased power of divergence, caused by morphin. Chloral hydrate had no constant action, in some experiments it impaired the circular rotation,. whereas in others no effect was noticeable. The same was observed of sulfonal and trional. A much longer action of ether was necessary to diminish the circular rotation than the power of divergence and convergence, whereas chloroform affected all these functions equally rapidly, but the disturbances of the two latter last longer than that of the former. From these experiments G. deduces the existence of a center of divergence (stimulation by morphin, overcoming of abduction prisms, clinical observations of paralysis) and of a center for circular rotation, since its paralysis occurs independently of other innervations with which otherwise it has the closest relations (action of ether). He thinks it most probable that the toxic substances influence the action of the cortical substance of the brain.

Finally G. calls attention to the clinical importance of disturbances of circular rotation. If totally paralysed, near work would be impossible, and if only weakened, asthenopia would be the consequence. The author describes his investigations to which he devoted many of his evening hours (the experiments were made after 10 P. M.) with admirable industry, and even sacrifice of physical comfort, in a very clear and exact form which will be read with great interest.

# ABSTRACTS FROM AMERICAN AND ENGLISH OPHTHALMIC LITERATURE.

BY

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Quarter ending June 30th, 1900.

### After Treatment of Tenotomy.

DUANE, ALEXANDER, New York. (*Medical News*, April 28, 1900.) The writer presents a very interesting article on the principles of treatment after tenotomy, which he recapitulates as follows:

"First, the patient is *prepared for the operation* by repeated exercise of the eye muscles and by repeated attempts to secure binocular vision and the recognition of diplopia. This may take but a few days or it may require a week or more.

Second, the operation, however performed, is *checked* all during its performance and immediately afterward by careful tests calculated to show the precise amount of deviation present at each step of it.

Third, *immediately after* the operation the patient is allowed to go about as usual, is encouraged to use his eyes for distant vision, and is urged to practice both eyes together for all ordinary looking. This practice is kept up daily, and daily tests are also made of the amount of deviation. If this is large and is not diminished satisfactorily, exercises are instituted to stretch the divided tendon, so as to secure its adhesion in a better situation than where it was left by the operation. These exercises are particularly necessary when the operation has left an undercorrection.

No bandage is applied, and deep sutures are avoided when possible. I generally instill a sterill salt solution or preferably a weak solution of sublimate, as the latter, it seems to me distinctly promotes the healing of the wound.

It will be observed that I have not mentioned as part of the post-operative exercises the *occlusion* of the better eye and the systematic practicing of the amblyopic eye in monocular vision. In fact, I do not think that this procedure should find place until the eyes have first been thoroughly trained in binocular vision or, at least, in binocular fixation. Hence I should prefer to reserve the use of this expedient until a period some considerable time after the operation. What *objections* are there to the method of treatment here outlined? The first that naturally suggests itself, *viz.*, delay in healing and the risk of exciting inflammation of the wound, is not, in my experience, valid. These wounds of the conjunctiva and ocular tendons, as is well known, are painless and heal without any inflammatory reaction. As is also known, the parts concerned will stand an extraordinary amount of manipulation without reacting in any way. And certainly the moderate straining and pulling produced by the exercise have never, so far as I have seen, caused any untoward effects.

The danger of *infection* may be urged. But, while conjunctival inflammation or even tenonitis has occurred as a very rare accident after these operations, such an event, as I understand the matter, is ascribable to infection at the time of operation due to contaminated instruments, and not to infection taking place subsequently through the atmosphere. In fact, there appears to be no reason to believe that such accidents are any more frequent with the open method than when an occlusive bandage is employed. At any rate their extreme rarity practically excludes them from consideration, and the added security and permanence of results that accrue from the open method surely more than counterbalance any such remote danger.

A more valid objection is that the patient by sudden movements of the eyes or undue use of them may strain the fibers holding the tendon in place, and produce *an excessive effect*. The likelihood of such an occurrence, however, is more apparent than real. It can practically always be avoided if we take pains to tell the patient just what he can and can not do with his eyes, and insist upon his observing ordinary precautions. If an accident of this kind does happen and if we feel that the over-effect is going to be permanent we can insert a suture and draw up the retracted tendon. Only, it is to be remembered that such an over effect is often transitory, and it is well, therefore, to wait a day or two at least before attempting to remedy it with a suture—in the meanwhile, of course, stopping the exercises or even reversing them.

To conclude: The method here outlined has been employed, either in part or in its entirety, for many years by a number of operators. My own acquaintance with it covers a space of about fifteen years. From that experience I feel sure that this procedure gives greater certainty of results and especially greater stability of results than any other. So persuaded am I of this, that I have come to regard the technic of the operation as of subordinate importance. In other words, I believe that we can not hope to effect an absolute correction by the operation *per se*, however delicately performed. What we can do by the operation is to set the eyes fairly straight and in a position in which being left free to move, they themselves will work toward an absolute correction. Hence, I say that, provided it is done with care and discrimination, and is checked by precise measurements made during and after its performance, it makes little difference how we do a tenotomy—but it makes a great deal of difference how we treat the eyes afterward."

### On the Abortive Treatment of Suppuration of the Eyeball.

SNELL, SIMEON, Sheffield. (*The Lancet*, March 31, 1900.) "I wish in this short note to direct attention to a mode of treating suppuration of the eyeball which is not as widely known, judging by the text-books as in my opinion it merits.

In a large ophthalmic clinic, suppuration of the globe is by no means infrequently met with. It is due to sepsis, but the immediate cause may be varied. Amongst the causes may be mentioned penetrating wounds of the globe with or without the lodgment of a foreign body, abrasions and wounds of the cornea, either accidental or the result of operation, burns of the cornea, etc. Panophthalmitis may also be due to metastasis from a variety of conditions. The clinical picture of suppuration of the eyeball is characteristic. There are considerable swelling of the lids, enlargement and protrusion of the globe, and swelling of the conjunctiva. In cases arising from metastasis the cornea would be clear and a yellowish appearance denoting the deposit of lymph in the vitreous cavity would have been visible at an earlier period than that just depicted. The pain is most acute and long continued and the condition may be regarded as lasting for at least from four to six weeks.

To relieve pain and to cut short the disease are the ends to which treatment should be directed. In the opinion of many, enucleation of the globe is not admissible, and it is almost entirely in such cases that the fatal instances associated with excision of the eye have occurred. It was laid down long ago by von Graefe that the excision of suppurating eyes should be avoided, owing to the likelihood of meningitis ensuing. The report of the committee of the Ophthalmological Society (1898) which was appointed to consider the relative values of simple excision of the eyeball and of the operations which have been substituted for it, showed the danger of excision in this condition, but in the large numbers dealt with it would nevertheless appear to be, comparatively speaking, of very infrequent occurrence. It has been held by some that the careful use of antiseptics at the time of operation and afterwards would obviate the danger alluded to. I am hardly, however, of this opinion. For many years antiseptics have been carefully used, as a matter of routine, in my practice in all cases of enucleation, but I have not felt that their employment has given me such a sense of security that I should, if other means are available, excise a suppurating globe, especially when the weight of opinion is strongly against such a course.

A better and safer plan, in my opinion, is to deal with the eye on general surgical principles. An abscess elsewhere would be opened and drained and a similar condition affecting the globe should be treated in like manner. I hardly think that this principle has been, up to now, sufficiently appreciated. Text-books—at least some of them,—it is true, make mention of incising the cornea or sclerotic and refer, often vaguely, to evisceration in the treatment of suppuration of the eyeball. The plan here advocated is, however, definite in procedure and in the results which it affords. It is not an evisceration in the sense that Mule's operation is, for no glass globe is inserted into the scleral cavity. It is more like the procedure advocated by Noyes, von Graefe, and Bunge, and called by some "exenteration," but it will be observed that no stitches are inserted into the sclerotic and it may be that their non-use has been a reason for the absence of the excessive reaction and the prolonged stay in hospital which have been mentioned by some operators.

I have notes before me of suppuration of the eyeball occuring in the following conditions in which the operation has been done: (1) After ulceration of the cornea; (2) wound of the cornea (in a young girl); (3) after cataract extraction, with lacrymal obstruction; (4) wound of the cornea by a piece of coal; (5) suppuration of the cornea, after injury from blasting; (6) foreign body in the eye; and (7) wound of the sclerotic by a hatpin. I have however done this operation for many years, and therefore the total number of instances would be a large one. In all these cases the plan adopted was as follows: ether having been administered, the cornea, unless it is already destroyed, is divided across by a cataract or Beer's knife. The next step is to remove the remains of the cornea up to the sclerotic, and this can be well done with scissors. Some of the contents of the globe may have escaped by this time, and the remainder, consisting of thickened, half-gelatinous-looking masses, can be drawn out with forceps. After removal of these portions, which are readily taken hold of by forceps, Mule's scoop may be used to aid further in the cleaning of the interior of the globe, or cotton-wool and forceps can be employed to wipe out the contents. Lastly, sublimate solution is freely syringed into the eye cavity until all the contents have been removed or washed away and only the bared sclerotic remains. Gauze is lightly packed into the eyeball and a bandage is applied. Almost immediate relief from pain follows the operation, with no return, and the swelling of the orbital tissues gradually subsides. The dressings are changed on the night of the operation, and during the next few days the eye is syringed twice a day and the gauze is re-applied. For about the first three days there is some discharge, after that practically none. The patient is even then better than he would have been at the end of some weeks if the disease had been otherwise treated. He will, as a rule, be fit to leave the wards in about 14 days. Ultimately a small button is left in the orbit, which is a better foundation for the adaption of an artificial eye than if enucleation had been performed. I have seen no ill results follow the operation, nor should I apprehend them. It is notorious that sympathetic ophthalmitis does not follow suppuration of the globe, and the procedure here advocated forestalls the completion of this condition. In one case some sloughing of the sclerotic occurred, but it did not do more than somewhat delay recovery."

### Trachomatous Pannus and Periectomy.

BOECKMANN, EDWARD, St. Paul. (*Amer. Journ. of Ophthalm.* April 1900.) With an experience of about 1000 operations of periectomy during a period of 25 years, the writer believes that he is entitled to speak with some degree of authority from a clinical point of view. Though he does not deny that trachomatous pannus may result from a conjunctival source by inoculation, mechanically or otherwise, it is his opinion that the deeper-seated trachomatous inflammations, namely the subconjunctivitis, episcleritis, and particularly the anterior scleritis, which are always present in the chronic cases, are more directly responsible for the pannus. Though the latter may yield to competent treatment of the conjunctival affection, he finds there is a deplorably large number of cases in which the progress is so slow and discouraging that more expeditious methods are desirable.

The author has performed periectomy in these cases, with increasing satisfaction. Though he formerly believed the beneficial effects of the operation were due to the division and obliteration of the new-formed vessels running into the cornea, he now considers this idea ridiculous. As pannus is a corneal complication of a circumcorneal disease, he now performs periectomy with the intention of destroying the zone of invasion, and of establishing in its place a zone of cicatricial tissue to act as a safe bar against further transgression into the cornea of the circumcorneal disease. When this has been effected, the corneal complication will take care of itself by means of its vital force aided by proper local treatment.

He describes the technique of periectomy as follows: "A narrow strip of the conjunctiva close to the peripheral border of the pannus is removed to a degree which corresponds to the peripheral extent of the pannus itself. Some hemorrhage from the severed, distended veins will ensue, but with no perceptible change in the corneal vascularization. While I am anxious to sacrifice as little as possible of the important conjunctival structure and therefore confine my resection to a zone of 2 or 3 mm. in width, I am much more liberal with the subconjunctiva, which is totally removed, in one connected strip, in front of the line of insertion of the external ocular muscles. The conjunctival edge will now retract still further back and we have a gaping wound, 4 to 6 mm. wide, in the bottom of which the sclera is exposed. The hemorrage is more pronounced after the subconjunctival than after the conjunctival resection; still the corneal vascularization remains pretty much the same, indicating that the main vascular supply to the pannus has not yet been reached.

The anterior scleritis, which invariably is present, but usually confined to the more superficial layers of the sclera, is now to be destroyed. For this purpose the sclera is to be scarified with a cataract knife in all directions until it assumes almost a natural, white color and the vascularization of the cornea disappears completely. A copious hemorrhage mainly arterial in character follows this step of the periectomy.

The fourth, last, most important and most difficult step in the operation consists in arresting the scleral hemorrhage and providing for an open, broad wound." The object of this last step is to prevent the immediate agglutination of the conjunctiva to the scleral wound which, in the opinion of the author is the cause of so many failures when it takes place. His object is to keep the sclera bare so that a wide zone of granulations may form which will later contract to a dense, firm cicatrix. This point he considers of great importance. Therefore he makes sure that the conjuntiva does not overlap the wound during movements of the eye in every direction.

The eye is dressed daily and the wound treated with some silver preparation. In the second week, the pannus will clear up considerably, with rapid disappearance of the vascularization and cicatrization of the wound. At the end of the fourth week the patient can be discharged.

### Lacrimal Obstruction in the Young.

GUNN, DONALD, London. (*Ophthalmic Review*, Feb., 1900.) According to the writer's experience, lacrimal troubles are most frequent among adults past middle life (especially women) and young children. Among the former, he finds that apart from any nasal disorder, in the majority of cases, there is no obvious cause for the trouble. On the other hand, among children, it is rare for lacrimal obstruction to arise without an obvious cause.

Since newly born infants may suffer from lacrymal abscess, it is evident that the dilatation of the sac must have developed during intrauterine life. But though the "lump" is noticed soon after birth, it does not inflame until a week or more later, after infection has taken place. He therefore regards the condition, in so far as it is congenital, as one of mucocele.

But there are other cases, to which Gunn draws special attention: They are cases in which, after the canaliculus has been opened, probing reveals a large cavity, much wider than the lacrymal duct whose position it occupies. filled with an excessive amount of muco-pus. This cavity represents a dilated duct, the dilatation being brought about during fetal life by an obstruction at the lower end.

This explanation suggests to the author the following queries: "(1) What is the histological nature of the tissue obstructing the lower end of the duct? (2) Is there any secretion and passage of tears during fetal life? (3) If not, what is the material that collects and causes distension of the lacrimal passage?"

In answer to (1) he states that there may be an imperforate condition of the mucous lining of the duct just where it enters the nasal cavity. There is also a possibility of the cartilages representing the lacrimal, superior maxillary, and inferior turbinated bones being at fault. Finally he mentions certain small cartilages in the fetal nose which normally disappear, but which may remain and act as an obstruction.

In answer to (2), Gunn finds that the secretion of tears in fetal life, if it takes place at all, is probably very slight; and to (3), that the distension of the sac and duct is due to the accumulation of the material secreted from their own mucous and acinous glands.

For the purpose of making a systematic report of the cases which have come under his observation, the writer classifies them into two groups: 1st, the early groups, including those cases in which the trouble was present at birth or soon after birth; 2d, the later group, consisting of those cases in which the child was free from any suspicion of lacrimal obstruction for the first few years of life, but develops a lacrimal abscess later on. Each of these main groups he again subdivides as follows:

"*The Early Groups* into: (a) Cases in which there is evidence of the obstruction having been present at or before birth, the fluid in some cases being contained in a cavity which probably represents a dilated nasal duct; (b) cases in which the symptoms have arisen somewhat later, generally in association with conjunctivitis, but which, even if truly congenital in origin, show no evidence of a dilated duct.

*The Late Groups* into: (a) Cases occurring in syphilitic children and often associated with interstitial keratitis; (b) cases in which the obstruction was caused by tubercular disease of the bones of the nose or orbit."

Under the heading (a) of the early group, the writer reports the histories of seven cases with results of treatment. He finds that the cases of membranous occlusion give no further trouble after an opening has been made by a probe led into the nose. When there is a cartilaginous occlusion, however, he recommends keeping the forced opening patent with some form of style, preferably one of lead wire, with the lower end drawn out of the nostril and turned up over the ala nasi to retain it in position.

Under (b) of the early group, the writer describes four cases, generally treated palliatively with instillations of chlorid of zinc, and emptying the sac by pressure.

Class (a) of the late group is represented by six histories. He believes that inherited syphilis is the commonest cause of lacrimal troubles in children, and since it usually causes extensive erosion of the bone about the sac and canal, makes the treatment most unsatisfactory. To illustrate the last class two detailed histories are given.

The writer has approached the present subject only from a clinical point of view, but refers to an article by Dr. Rochon-Duvigneaud, which appeared since his paper was written in which the existence of congenital occlusion at the lower end of the duct has been proved on anatomical grounds.

### The Regeneration of the Crystalline Lens.

RANDOLPH, ROBERT L., Baltimore, Md. (*Johns Hopkins Hospital Reports*, Vol. IX.) The writer gives the results of experimental study of this subject in the eyes of rabbits and of newts. In the case of rabbits the conclusions arrived at are the following:

1. "Regeneration of the lens in the rabbit's eye occurs only when some portions of the lens are left behind at the extraction.

2. "Removal of the lens in capsule is followed by a negative result.

3. "Panophthalmitis will lead to a negative result.

4. "The volume of the regenerated lens may be equal to that of the original lens.

5. "The regenerated mass is lenticular, though sometimes it is ring-shaped and at other times semi-lunar.

6. "The reason why positive results occur so much less frequently than negative ones, is because we are unable to protect the animal from infection after the operation. We have nothing to take the place of after-treatment which is always employed in cataract operations upon human beings.

7. "Theoretically, one would suppose that the longer the animal was allowed to live, the greater would be the volume of the regenerated mass. This, however, was not the case in my experiments. In one instance where an animal was killed fifteen months after the extraction of its lens (case not reported among the twenty), the regenerated lens was about equal in size to that seen in case VII, where the rabbit was killed after six weeks. It may be added that there was no apparent reason for this.

8. "A *mild* iritis, lasting a week or ten days after the operation, is conducive to a successful result. This may be explained by the increased vascularity of the parts which lie next to the lens."

In the case of newts, his conclusions are: "1. Extraction of the lens is followed by its regeneration. 2. Regeneration occurs even when the lens has been removed in capsule, so that the new lens must take its origin from tissue having a different physiological value, and, as the experiments of Wolff have shown, this structure is the iris."

### Secondary Cataract.—An Experimental Study.

BATES, W. H., New York. *(N. Y. Med'l Journal,* July 7. 1900.) After a series of experiments upon rabbits' eyes, for the purpose of studying the nature and origin of secondary cataract, the writer has come to the following conclusions:

"1. Secondary cataract in the rabbit is composed of new connective tissue, usually, together with the folded posterior capsule of the lens. But the opacity of the structure occupying the pupillary area is due to the new connective tissue and not to the capsule.

2. The *formation* of secondary cataract in the rabbit begins with the accumulation in the anterior chamber of a coagulable fluid at the time of operation. Fibrin appears in the pupillary area from the coagulation of this fluid. Later, new connective tissue replaces the fibrin.

3. The *prevention* of secondary cataract in the rabbit may be secured by performing a quick operation, closing the scleral or corneal wound with sutures, and, restoring the anterior chamber with normal salt solution.

The studies recorded in this paper have been limited to the rabbit, and, while they afford a strong presumption that secondary cataract in man also is due to a formation of new connective tissue in the pupillary area, this can be definitely determined only by the study of human material. This study is now under way."

### Defective Color Perception and Vision.

WILLIAMS, CHAS. H., Boston. (Proceedings of the New England Railroad Club, for April, 1900.) The above is the title of an address of the author before the New England Railroad Club. In a practical and simple form, intelligible to laymen, he covers the whole ground of the examination of candidates for railroad service in respect to their color-perception and acuity of vision. After a brief definition of color-blindness and some remarks upon normal color-perception he speaks of the two distinct classes of defective color-perception, the congenital or hereditary form, and the acquired form or central scotoma. He points out that the former, while it is not usually associated with impaired acuteness of vision, is not, on the other hand, subject to improvement, whereas in the latter form the opposite conditions prevail.

The records of the Burlington system of railroads show that in twelve months after Feb. 1st, 1899, there were rejected from among those applying for work, four hundred and sixty-seven whose acuteness of vision was insufficient, sixty-one who failed in color-perception, and twenty-eight who were defective in hearing. He maintains that the proper time to make such tests is when men apply for work, since it is manifestly unfair to a man to accept him and hold out to him the hope of promotion, and then, when he is too old to get other employment, to discharge him for a defect which could have been discovered when he applied for work.

The tests for color-perception which are recommended are the Holmgren test and the lantern test. In the latter test, the writer prefers a lantern constructed by himself about a year ago, a detailed discription of which is given. In connection with each glass there is an illuminated number or letter which can be seen by the person making the examination, but which is screened from the person who is being tested. By this means a record can be kept of the color shown and the name given to it.

The author attaches even more importance to the examination for acuteness of vision of the candidates than to the test for color, because the number of cases of defective vision is so much greater, and because there is a much greater chance of acquired defect in vision. For this reason he also finds it necessary to have a re-examination at intervals of about three years. He describes the examination for acuteness of vision and the principles upon which it is based, and recommends test cards which are arranged so as to avoid the errors found in many of those in general use.

Another point made by the writer is that the acuteness of vision should be tested when the men are fresh, and not when they are tired, since fatigue will cause a very considerable reduction in the acuteness of vision. Finally he gives the standards adopted on the New York, New Haven and Hartford Railroad for the different grades of employees, the necessary vision being $^{20}/_{40}$ with both eyes, without glasses.

Appended to the paper are the detailed instructions for examination of vision, color-sense and hearing, given to each examiner of the above mentioned railroad; and a copy of the printed blank upon which the record is entered.

### On the Inefficiency of the Board of Trade Tests for the Detection of Color-Blindness.

EDRIDGE-GREEN, F. W. (*The Lancet*, May 26th, 1900.) In this paper, the writer endeavors to show that a test for color-blindness to be efficient, must be based upon the facts of color-blindness and not upon any theory. Eleven years ago he drew attention to the inefficiency of Holmgren's test, and his subsequent experience has made him even more certain of the correctness of his former statements. Statistics are given showing the percentage of failures in tests for color vision made by the Marine Department since 1885, showing that Holmgren's test, which was used in place of the old method of naming colors since 1894, did not reveal a larger percentage of failures than the old average of about one per cent.

Not only does this test fail in some instances, to detect color-blind persons, but normal individuals are rejected by it, particularly when the examiner adheres very carefully to the directions accompanying the tests. The correctness of this assertion is shown by the large proportion of successful appeals among those who were rejected since 1895, and is illustrated by the author with a very clear case occurring in his own experience.

He contends that it is absolutely necessary that the person to be tested should pick out the colors as colors, and not as shades. It is not necessary that he should know the names applied to nondescript colors but only the names of the fundamental colors—red, yellow, green and blue. A man who names a green light as red must either be color-blind or dangerously ignorant of colors. The author has never met with a case of the latter kind and doubts whether it could be met with in the class of men tested.

The writer also objects to the Holmgren test on the ground that a person with central scotoma will escape detection if examined by this test. As a light at a distance occupies the central portion of the field of vision, these persons will be found to recognize colors when close to them, but not when they are at a distance.

The tests which the writer uses, he prefers because they are founded on the facts of color-blindness, apart from any theory and so will hold good whatever theory be adopted. They are two in number. One he has called the "classification test" and the second the "lantern test." He does not consider the former essential but values it as a great help in ascertaining the color-perception of an individual. It consists of four test colors and 180 confusion colors, which are chosen with the view of presenting as much difficulty as possible to the color-blind person, and as little as possible to the normal individual.

The apparatus of the lantern test consists of a lantern and 13 slides, seven slides containing colored glasses and six containing modified glasses. For an accurate description of these tests the author refers to his book on "Color-Blindness," but he mentions the advantages which the lantern test possesses over Holmgren's. He finds that it reproduces rather closely the conditions under which marine and railway employees are expected to distinguish signals, and that it demonstrates perfectly to an onlooker the incompetence of those rejected. It proves to the defective person himself the fact that he is color-blind. A person with a central scotoma is at once detected as the light occupies the central point of the field of vision. Finally the writer claims for the test that the light has none of the accessory qualities which enable the color-blind person to escape other tests, and that no amount of coaching will enable him to pass it.

### A Study of the Changes in Refraction in 400 Eyes During Seven Years.

HANSELL, H. F., Philadelphia. (*Ophthalmic Record*, April, 1900.) The writer was stimulated to make this investigation by the question so frequently asked by patients: "How soon should I return for a change in glasses?" He took from his private case books 200 consecutive cases of refraction that returned for a second examination in periods varying from two to sixteen years. The eyes examined were free from disease of all kinds and the patients made no ocular complaints that were not referable to defects of refraction. Astigmatism was reckoned by the writer as either myopic or hyperopic refraction, according to its kind, and compound astigmatism was not differentiated from simple. Of the 400 eyes, 249 were hyperopic, of which 94 showed no changes; 114 were myopic, and of these 37 showed no changes. The author arranged these cases of hyperopia and myopia in two separate tables, showing the total number of cases, the degree of refractive error, and the number of unchanged cases, for each decade. Of the 400 eyes, 141 showed an increase in their refraction, and 119 a decrease. The male and female sexes were equally represented.

A third table is added by the writer, showing the condition of refraction after the last examination of the 400 eyes and giving the number belonging to each decade, the percentage of unchanged eyes, the percentage of increases and the percentage of decreases in refractive condition.

The writer regrets "that no definite or even practical conclusion can be drawn that may serve as an answer to the question" of the patient in any individual case. Still he finds that, if the number of eyes examined by him is accepted as sufficiently great for general deductions, he can make the following conclusions:

"1. That among 400 eyes corrected under mydriasis and wearing glasses for all needful purposes for a period of years averaging $7^1/_3$ in the total number, a large proportion showed no change in their refraction.

2. That increase of refraction was greatest in the third decade, with the second decade as a close second, and after the thirtieth year the proportion of increase showed a rapid decline.

3. That the decrease of refraction was at its minimum at the fourth decade, and that in the later years the ratio showed a marked and rapid increase and the tendency to decrease in refraction was greater than the tendency to increase.

4. No arbitrary rule can be formulated that shall determine when a change in the correction is indicated, but we must be guided by the age rather than by the refraction, and that changes in the form of the eye are quite as frequent when the refractive error is low, as when it is high."

### The Sequence of Changes in the Optic Chiasm Produced by Acromegaly as Exemplified by Three Cases.

HOLDEN, WARD A., New York. *(Archives of Neurology and Psychopathology*, Vol. II, 1899.) "From an examination of these three cases it is evident that the gross changes which the chiasm may regularly be expected to undergo in acromegaly are these:

"First, the enlarging pituitary body compresses the posterior portion of the chiasm. Following this, the posterior and middle portions of the chiasm are flattened and forced upward, thus becoming separated from the anterior portion, which is protected from pressure by the bone beneath it. Later, with this tilting upward of the chiasm posteriorly and the forcing forward of the anterior wall of the pituitary fossa, the anterior portion of the chiasm is encroached upon by the pituitary body and arched directly forward. Finally, the chiasm may be cut through completely.

"The glandular enlargement of the pituitary body in acromegaly always remains within its capsule and never penetrates the chiasm as the malignant tumors of the pituitary body may do. Hence the pressure on the chiasm is diffuse, and the resulting degeneration in the chiasm need not be exactly at the seat of pressure. Furthermore this diffuse pressure may interfere with the function of large portions of the chiasm, but often only slightly, so that the defect in the visual field is not absolute, but for colors only.

"There may be considerable variety in the type of contraction of the visual fields. If the pituitary body becomes enlarged symmetrically, the chiasm will probably be compressed posteriorly and flattened out laterally. With diffuse pressure on the chiasm in its entire lateral extent there will probably be concentric contraction of the visual fields; but if the median portion of the chiasm is the more compressed, as is frequently the case, the crossed fibres in the chiasm will be those most interfered with, and there will result a more or less typical bitemporal hemianopsia.

"If, however, one side of the pituitary body enlarges more rapidly than the other, for a time one tract alone may be compressed, causing homonymous hemianopsia.

"Again, the atrophy in one optic nerve may differ from that in the other, because one has been pressed against a rigid anterior cerebral artery instead of against the soft brain substance.

"Furthermore, Broca believed that the optic nerves might be compressed by narrowing of the optic foramina. In case 3, the foramina were somewhat contracted, although there was no evidence of pressure upon the nerves, which were slightly atrophied.

"Finally, in view of the fact that in acromegaly there are frequently signs of inflammation of the optic nerves, amounting at times to choked disc, the nerve fibres might be compressed as a result of interstitial inflammation. In none of these three cases, however, were microscopic signs of neuritis found.

"About 200 cases of acromegaly have been reported. Disturbances of vision were noted in about half of them. In more than 50 per cent. of the cases with disturbance of vision there was found concentric contraction of the fields. In somewhat less than 50 per cent. there was bitemporal hemianopsia, absolute or for colors only, with or without some contraction of the nasal halves of the fields. In less than a dozen cases there was homonymous hemianopsia, and in one case there was found a typical binasal hemianopsia.

"The type of contraction, of course, often changes as the disease progresses,"

### Remarks on the Diagnosis and Prognosis in 100 Cases of Double Optic Neuritis with Headache.

WILLIAMSON, R. T., Manchester, and ROBERTS, EDWARD, Manchester. (*The Lancet*, May 12, 1900.) "The detection of optic neuritis is of the greatest importance in the diagnosis of cerebral affections. Nevertheless, in certain cases of double optic neuritis with headache considerable caution is necessary before coming to a conclusion as to the exact nature of the disease. Though these two symptoms are present in the majority of cases of brain tumor and are so frequently due to this cause, they are also met with in other diseases. In some cases of granular kidney, for example, the patient comes under treatment for headache and failure of vision; and ophthalmoscopic examination may reveal intense optic neuritis like that of cerebral tumor (neuritic form of albuminuric retinitis). At first the symptoms appear to indicate cerebral tumor, but a careful examination of the urine and cardio-vascular system will clearly reveal the cause. Limited space does not permit an enumeration of all the cases of double optic neuritis with headache. The results of the examination of 100 cases presenting these two symptoms reveal, however, several points of interest. Most of these cases have been seen by us conjointly: some were seen separately, whilst others (in groups I to VIII) were examined by one of us (R. T. W.) whilst holding the post of medical registrar at the Manchester Royal Infirmary. For permission to include the latter amongst our cases we are indebted to the medical board of that hospital.

With respect to the diagnosis and termination these 100 cases may be grouped as follows:

I. Brain tumor, verified by necropsy, 27.

II. Cases terminating fatally; probably, majority due to brain tumor; but no necropsy obtained, 27.

III. General symptoms of brain tumor; but necropsy revealed distension of the ventricles of the brain with fluid; no tumor (serous meningitis of ventricles), 2.

IV. Cerebral abscess (fatal), 2.

V. Tuberculous meningitis (fatal), 2.

VI. Chronic interstitial nephritis; neuritic form of albuminuric retinitis (fatal), 3.

VII. Toxic conditions and blood diseases:
  Chronic lead poisoning, 3.
  Ulcerative endocarditis (fatal), 1.
  Purpura hemorrhagica (fatal), 1.
  Henoch's purpura (fatal), 1.
  Chlorosis with cerebral symptoms (recovery), 3.

VIII. Headache and double optic neuritis (without localizing symptoms); probably syphilitic (recovery with blindness, 2; with impaired vision, 4), 6.

IX. Headache and double optic neuritis without localizing symptoms; no evidence of syphilis; duration six and two and a quarter years respectively. Termination still uncertain, 2.

X. Headache and double optic neuritis without localizing symptoms; no evidence of syphilis: recovery with blindness, 8; with impaired vision, 3; with good vision, 18.

The following are brief abstracts of the notes of the cases in group X. which have come under our observation and which we have followed for a considerable length of time. The number of years during which each case has been followed is given in parenthesis after the brief note.

1. A boy, aged 10 years. Double optic neuritis, headache, and vomiting: slight internal strabismus of the left eye. Recovery with normal vision. (Seven years.)

2. A young woman, aged 17 years. Headache, vomiting, and double optic neuritis. Recovery, but with impaired vision in one eye and blindness in the other. (Five and a half years.)

3. A young woman, aged 18 years. Double optic neuritis, headache, and vomiting; several epileptic fits. Recovery, with useful vision in one eye; vision in the other is very defective. (Seven years.)

4. A young woman, aged 18 years. Double optic neuritis, headache and vomiting. Recovery, but complete blindness followed. (Four years.)

5. A young woman, aged 19 years. Double optic neuritis, headache and vomiting. Recovery with good vision. (Three years.)

6. A man, aged 20 years. Double optic neuritis, headache, and vomiting. Recovery, but complete blindness followed. (Two and a half years.)

7. A girl, aged 10 years. Double optic neuritis, headache, and vomiting; knee-jerks were absent. Recovery, but complete blindness followed. (Three years.)

8. A boy at the age of 13 years had double optic neuritis and headache; recovery ensued. At the age of 15 years he had a return of headache and double optic neuritis; also vomiting. At a later date there was partial anesthesia in the distribution of the right fifth cranial nerve; the right cornea was opaque; there was complete blindness in both eyes. Partial anesthesia of the face and blindness remained, but otherwise the patient recovered

and felt quite well nine months after the second attack.

9. A girl, aged 16 years. Double optic neuritis, headache, vomiting; slight internal strabismus of the right eye. Recovery with normal vision. (Four and a half years.)

10. A boy, aged 10 years. Double optic neuritis, headache, and vomiting. The head had increased in size. Recovery, but with complete blindness. (Three years.)

11. A woman, aged 19 years. Double optic neuritis, headache, and vomiting. Recovery with normal vision. (Three years.)

12. A boy, aged 15 years. Double optic neuritis, headache, and vomiting. Recovery. (Two and a half years.)

13. A woman, aged 21. Double optic neuritis, much swelling of the discs, headache and vomiting. Complete recovery with normal vision. (Four and three-quarter years.)

14. A girl, aged 15 years. Double optic neuritis, headache, and vomiting. Recovery with good vision. (Five and a quarter years.)

15. A boy, aged 12 years. Double optic neuritis, headache, and vomiting; slight internal strabismus of the right eye. Recovery with good vision. (Four years.)

16. A man, aged 40 years. Double optic neuritis, headache and vomiting. Recovery but with complete blindness. (18 months.)

17. A youth, aged 17 years. Double optic neuritis, headache and vomiting. Recovery with total blindness. (Five years.)

18. A woman, aged 22 years. Double optic neuritis, headache and vomiting. Recovery, but with total blindness. (Two and three-quarter years.)

19. A girl, aged 14 years. Double optic neuritis, headache and vomiting; internal strabismus (left) for 14 days. Recovery with normal vision. (Two years.)

The following are brief notes of the cases in group IX:

20. A girl, aged 12 years. Headache, vomiting and double optic neuritis in December, 1893. Recovery in 12 months, but vision much impaired. She remained well with the exception of occasional headache until December, 1899. Then the severe headache returned.

She became ataxic and optic neuritis reappeared. In April, 1900, the headache was much less and the patient felt much better, but she was completely blind. (Six and a half years.)

21. A young woman, aged 17 years. Headache, vomiting and double optic neuritis. Vision was impaired. Vomiting ceased; the headache continued for over two years, but recently disappeared after lumbar puncture. (Two and a quarter years.)

In all cases of optic neuritis a systematic and careful examination of the patients should be made. The urine and cardio-vascular system should be examined for signs of chronic interstitial nephritis. The gums should be examined for the lead line and other indications of lead poisoning should be sought for; the question of chlorosis and other "blood diseases" should be considered; and the ears should be examined for signs of otitis. But when all these conditions have been excluded and when the symptoms are apparently due to a cerebral affection there is one group of cases in which localizing brain symptoms are absent and to which the chief indications of disease are headache, double optic neuritis, and often vomiting. In most of these cases syphilis can be also excluded. A diagnosis of brain tumor is given, and the growth is thought to be situated in some region in which the localizing symptoms are at first indefinite—cerebellum, temporo-sphenoidal lobe, or prefrontal region. Such a diagnosis often proves to be correct. Localizing symptoms may develop later and a necropsy may show the accuracy of the opinion expressed. But sometimes, to the surprise of the medical man, a fatal termination does not occur; the symptoms sometimes disappear and the patient recovers, though very often impairment of vision or loss of vision remains. The patient may continue in good health for years or for a lifetime afterward. Most medical men who have paid much attention to cerebral diseases will have met with a case or cases of this kind. The chief object of our article is to call attention to this class of cases and to indicate the frequency of their occurrence. 19 out of 100 cases of double optic neuritis with headache in the table just given could (after careful examination) be placed in this group (X).

What is the cause of the symptoms in this group of cases?

Possibly in some cases the symptoms are caused by a nonmalignant tumor (or tuberculous mass) which ceases to extend and becomes quiescent and encapsuled. One of us has recorded a case in which symptoms of cerebral tumor (including Jacksonian epilepsy and hemiplegia) gradually subsided and temporary recovery ensued; but three years later symptoms of cerebral tumor developed and death occurred. The necropsy revealed a recent large tuberculous mass in the cerebellum and an old encapsuled tuberculous mass just beneath the motor cortex in the right cerebral hemisphere. The latter had evidently been the cause of the early cerebral sypmtoms from which he had recovered. An instructive case has been recorded by Dr. T. K. Monro of Glasgow. The patient at the age of 16 years suffered from severe headache with failure of vision which passed on to complete blindness. For 33 years he was an inmate of a blind asylum, ophthalmoscopic examination showing double optic atrophy. He died at the age of 63 years from cancer of the stomach and the postmortem examination also revealed a large myxomatous tumor in the left half of the cerebellum. In all probability the early cerebral symptoms had been associated with optic neuritis which had passed on to optic atrophy and the cause had been the myxoma in the cerebellum which had remained quiescent for 46 years.

In some cases of double optic neuritis with headache and general cerebral symptoms when recovery occurrs the cause is probably distention of the ventricles of the brain with fluid—serous meningitis of the ventricles (Quincke). This condition was present at the necropsy and no tumor growth could be found in two out of the 100 cases tabulated. It is probable that the number of the cases in which a diagnosis of cerebral tumor has been made, but in which recovery has occurred have been due to this condition—serous meningitis of the ventricles. Probably the two cases in group IX. and possibily some of the cases in group II., in which death did not occur for several years after the onset of symptoms, were of this nature. Other cases which recover may be due to a basal meningitis.

The table given above is instructive both as regards the diagnosis and prognosis in cases of double optic neuritis with headache. It shows the necessity for careful examination before giving either a diagnosis or prognosis, and the clinical group of cases No. X ought always to be borne in mind whenever the diagnosis is obscure and localising symptoms are absent.

There are two other points to which we should draw attention. In 10 out of 100 cases the patient recovered completely from the headache and general cerebral symptoms and regained perfect health, but the optic neuritis was followed by atrophy and complete blindness. In the face of this terrible termination we cannot help thinking that simple trephining of the skull and the removal of bone, without any interference with the brain, as suggested and practised by Mr. Victor Horsley for the relief of optic neuritis and pressure symptoms, is a method of treatment worthy of more frequent trial when vision is failing markedly. Dr. James Taylor has published cases which appear to show that this method of treatment may be of service in checking the optic neuritis and failure of vision. In the class of cases in group X. if there should be a suspicion that the symptoms may be due to serous meningitis of the ventricles, lumbar puncture appears to be worthy of trial, since cerebral cases are now on record in which this treatment appears to have been of great service and in which the cause of the cerebral symptoms was probably that just mentioned."

### The Eye-Symptoms of Locomotor Ataxia, with a Clinical Record of 30 Cases.

HAWTHORNE, C. O. (*Brit. Med. Journ.*, March 3. 1900.) Refering to the generally recognized fact that the disease known as locomotor ataxia may include among its clinical manifestations several ocular symytoms, such as the Argyll-Robertson pupil, ocular paralyses, and optic-nerve atrophy, the writer states that a further step forward in our knowledge of this disease has been the recognition of the fact that ocular disturbances may precede the evidences of any spinal lesion. He states that primary atrophy of the optic nerve has been known to precede the appearance of spinal symptoms for several years, and thinks therefore, it is not unreasonable to presume that both the Argyll-Robertson pupil and an ocular paralysis may each have the same chronological relation. He emphasizes the extreme difficulty that exists in collecting evidence to support this suggestion, since the disease is usually very slow in its development and the cases do not remain sufficiently long under the observation of the same physician. Though the collection of observations extending over a long term of years will be necessary for the actual solution of the question, still, the author believes that the presentation of data arrived at from the study of a number of cases observed for relatively brief periods will be of value, provided these are sufficiently numerous and have been carefully studied. These conditions, he believes, are fulfilled in the present series of thirty cases from which he draws the following conclusions:

"(1) That an optic-nerve atrophy, an ocular paralysis or an Argyll-Robertson pupil may exist as an isolated symptom for a considerable time, presumably for years;

(2) That any two of these may be associated together, with a correspondingly increased presumption that the diseased process causing them is of the locomotor ataxia order;

(3) That any one of the three, or a combination of two or all of them may exist in conjunction with a greater or less degree of evidence of spinal disease; and

(4) That occasionally a case which commences with purely ocular symptoms may be seen to develop with comparative rapidity, characteristic symptoms of the spinal lesion of locomotor ataxia.

The cases therefore may be held to justify the view that an optic-nerve atrophy, an ocular paralysis, or the Argyll-Robertson pupil (not capable of other explanation) must be regarded as affording a definite basis for suspicion in reference to a possible development of spinal disease. On the other hand, it must be admitted that the prognostic indication so far as spinal disease is concerned is not an absolute one, for the ocular defect may exist certainly for many years without any evidence whatever of involvement of the spinal cord."

The writer adds the clinical histories of the thirty cases from which he has drawn his conclusions, emphazing the significant features of each case.

### Clinical Study of the Ocular Symptoms Found in So-Called Posterior Spinal Sclerosis.

OLIVER, CHARLES A., Philadelphia, Penn. (*Amer. Jour.*

*Med. Science*, July, 1900.) "The following broad generalizations of the ocular symptomatology found in so-called posterior spinal sclerosis (a disease according to the newest teachings dependent upon an atrophy or degeneration of the sensory neurons, followed by sclerosis, though most probably antedated by varying degrees of low-grade inflammation) are the result of a series of most carefully applied studies extending over a period of more than five years. Much of the clinical work has been obtained from the services of the two great hospitals with which I am connected. Every case studied, now amounting to more than one hundred properly made uncomplicated diagnoses, has been submitted to a routine examination embracing every detail of relevant value, while several have been carried to a post-mortem room and the microscope table for further examination as to the histological and pathological changes in the ocular structures.

"Given in this way, as a brief *résumé* of the entire work, and a crystalization of the whole, as it were, the subject-matter may be fairly assumed as having some weight in scientific medicine and of being of working value to the clinician. As such it is offered.

"Recognizing, even from the ocular stand-point, the broadness of the subject and its many ways of approach, the main and most salient points have been robbed of all detail, dyscrasic differences have been eschewed, and everything that has been considered worthy of notice has been given in a few brief words of description.

"Realizing from an extensive clinical study the great primary divisions of the disease into a very badly termed preataxic and an ataxic stage—better an initiative (or probably inflammatory) and a degenerative stage—the separation of the subject-matter into two great clinical sub-divisions (cerebral), "optic type" (by some classed among the cervical groupings) and the spinal types, which latter many neurologists subdivided into the lumbodorsal and the cervical, is offered merely for sake of convenience and greater ease of comprehension, reserving for a later and more extended paper upon the different phases of the subject the minute divisions and special ramifications of the disease in its etiological and histological bearings to a number of more specialized articles which will appear from time to time as experimental work may accumulate and pathological material warrant.

"The gross 'optic type,' appearing in about 10 to 15 per cent. of the total number of cases (the average age in my services having been forty-two years and the male sex predominating by 90 per cent.) is at first shown by fair if not normal vision. This is followed, without the appearance of any gross general symptoms or even pupillary changes in the majority of cases, by a whole series of visual paresthesias and somewhat irregularly contracted fields of vision for white, with markedly diminished ones for color. In association they are frequently slightly marked, though undeniably present, spastic movements of the extra-ocular muscle series, combined with both normal and even exaggerated deep reflexes as particularly seen in the patellar tendon groupings. In this stage, in the majority of cases, the tissues of the optic nerve-head will be found somewhat swollen; the edges of the disc will appear slightly hazed; the retinal arteries, especially in the syphilitic types of the disease, will exhibit perivascular change; the retinal veins will be more or less tortuous; and slight disturbances in the choroid will be manifested. Unfortunately, this stage will be the one that is most infrequently seen, unless every case of ophthalmic disorder presented to the clinician in which an ophthalmoscopic study can be made is submitted to routine methods of examination, as has been constantly done by the writer.

"Sooner or later this grouping of irritative and inflammatory signs will be followed by symptoms of degeneration, each case being complicated with an intervening stage of apparent betterment of both the objective and the subjective conditions, lasting for varying periods of time, and dependent in most instances upon the grade of the disease, hygiene, and therapy.

"The disease not kept in abeyance, atrophic processes in the optic nerves gradually and with only too great certainty take place. The optic nerve-head substance becomes intensely greenish gray in tint, particularly in its temporal half. Its general capillarity lessens, the nerve-head borders again become visible, its surface sinks smoothly and quite evenly, exposing the cribriform plate in some instances, while the retinal and choroidal tissues about its edges appear somewhat thinned and degenerated.

"If perivasculitis has been present, the lymph-channel walls remain both thickened and opaque, while the vascular lumens are frequently encroached upon and diminished in calibre. If there has not been any perivascular change, the blood-streams, particularly the arterial, become narrowed and offer but slight contrast in tint to that of the contiguous structures.

"Vision for both form and color, which may have induced false hopes for permanent betterment by having arisen to varying degrees of acuity, saturation, and kind—and even in some instances to what is ordinarily supposed to be normal—gradually decrease until at last all light-perception is gone.

"The visual fields having broadened in a few cases, and in quite a number of instances having shown a fair amount of color saturation, again contract, as a rule, most irregularly without the presence of any scotomatous areas until sector after sector of the retained portions are removed and naught but absolute blindness remains—a blindness, which though terrible in itself, seems in some instances to limit and even to lessen many of the gross motor signs, and prevents the occurrence of the horrible visceral crisis which make the lives of some of the cases frightful even to contemplate.

"During this stage, the preataxic, as it is improperly called by many, and at times even rather early in it, some of the well-known pupillary, ciliary and extraocular muscle signs become manifest in at least 30 to 50 per cent. of the cases. Both temporary and permanent failures of iridic reaction to light impulse (80 per cent.), with frequently uncontracted oval and ovoid pupils; commencing inability of continuance of forced lateral monocular and binocular fixation, with tremulousness of palpebral movement; doubtful slight pareses of convergence, and paretic diplopias of various kinds are among the prominent motor signs present.

"Later, after the most variable of periods, though unfortunately only too frequently quite early in the course of the disease, without the appearance of many of the ordinary gross general expressions of the condition, the completed ocular picture of absolutely irremediable total blindness in the two eyes generally appears. The aimless gaze, the contracted pupil, the failure of the iris light-reflex, the increasingly uncertain movements of the iris to accommodative and convergent efforts, the extraocular pareses, with palpebral fissure narrowing, even the epiphora in a few instances, and the not rare spontaneous twitchings of the sympathetic fibres of the orbicularis muscles during both forced and ordinarily imperfect action, are offered the ophthalmic clinician as some of the main and most important ocular guides for the diagnosis of the disorder. Hypotony, in some instances most doubtful, was found in but 15 per cent. of the cases studied.

"The other type of the disease, 'the spinal,' in which the classic symptoms of paresthesia, in the trunk and upper and lower extremities, lancinating pains, enfeeblement of the muscular and temperature senses, rapid fatigue, inability to walk backward, loss of manual dexterity, etc., followed by lessening and loss of the main deep and superficial reflexes, inco-ordinations of the most bizarre types, and crises (often barometric in type) of the most excruciatingly painful and serious character, seldom finds its way into the ophthalmic dispensary. In consequence, this form of the disorder is not so frequently seen by the ophthalmologist unless he have the wards of a large general hospital or the out-door practice of a special hospital for nervous diseases at his command.

"For long periods of time, in spite of coarse objective appearances of the optic nerve-head, good and even normal vision in fairly large form, though markedly decreased, color-fields of irregular and slightly indented shapes in the great majority of instances are found. Miotic pupil, often pin-point in size, with intermittent losses of light-reaction, until at last the irides remain absolutely fixed to the strongest and the most prolonged light-stimulus, are common. The so-called sympathetic skin-reflex of the iris—a most uncertain sign to obtain in this class of subjects—was undoubtedly absent in some of the cases.

Early ataxias of all kinds, connected with the sixth, the third, the fourth, the fifth and the seventh pair of nerves, quite irregular in character (even to the slightest asthenopias, and uncertain pareses of accommodation), very variable in degree, and markedly interchangeable, seem at times even to usher in the main clinical aspects of the disease, while minor expressions of optic nerve-head and adjacent retinal change, such as very slight greenish-gray discoloration of the tissues of the optic disc, shallow and broad cuppings of the disc-substance back to the lamina cribrosa (which is very frequently visible), and a diminution of the retinal circulation without perivasculitis or retinal hemorage, represent the most pronounced findings with the ophthalmoscope. In fact, in spite of all these symptoms it seems that there is an absence of all gross inflammatory signs in the ocular structures, even in association with the coarsest general disturbances of the disease, such as dystrophies and the grossest trophic disorders.

"These objective and subjective signs, both constantly and intermittently progressive and markedly interrelated, express their presence upon a sensory functioning power at first during exposure to feeble external stimuli, until at last nothing but small peripheral areas of light-perception in the lower temporal fields constitute the last visual expression of physiological action, and exhibit their influence upon an unstable and variable motor apparatus that finally becomes fixed but at times useless."

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

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## Quarter Ending June 30, 1900.

### Gangrenous Pericystitis.

VEILLON AND MORAX, Paris. (*Annales d'Oculistique*, March, 1900.) Briefly, the clinical history of the case seen by these two authors was as follows: The patient, a woman of thirty-two years of age, first noticed a swelling of the right eyelid accompanied with lacrymation. On consulting a physician, a diagnosis of lacrymal conjunctivitis was given, the canal being found patulous. A year and a half later the eye again became inflamed and the lacrymation, which had continued from the first, increased. In two days' time the condition became much aggravated. The patient's temperature rose above normal and for two nights she suffered from insomnia. There was a tingling sensation on the nose and on the right cheek. The eyelids soon commenced to swell, and became quite red in the region of the internal canthus. The fever and the insomnia, with loss of appetite and general lassitude, continued. In about a week's time the swelling "broke" and discharged a moderate amount of pus. A few hours after this the patient applied to the authors for treatment. The eyelids were swollen shut, hard, and edematous. There was a marked swelling in the region of the lacrymal sac. On the summit of the tumefaction there was a small opening from which pus could be evacuated. The pus was of a grayish color and possessed an extremely fetid odor. A striking feature of the case was the fact that although the patient was of a robust constitution, her facial expression indicated an extreme degree of septic intoxication. In a few days' time a sphacelus was discharged from the abscess. The disease slowly yielded to treatment. Before cure was affected two small exostoses appeared at the level of the canal, but these were rapidly absorbed.

A careful bacteriological examination revealed the presence of three kinds of organisms, one, a streptococcus of erobic type and two of anerobic nature. Of these latter varieties one was a bacillus which corresponded to the descriptions of the bacillus that was first found by Veillon and Zuber, and afterwards by Halle, who named it the Bacillus Funduliformis. It is never, they say, found except in gangrenous or putrid tissues. The second anerobic organism consisted of a cocco-bacillus which had never been previously described. As found in the pus, it appeared as a very short rod, growing both in pairs and in masses. In cultures it seemed more elongated in form, and frequently presented a spot in its middle which resembled a spore. It did not give the typical chromophilic reactions. It was easily cultivated in a gelatin-glucose medium, in which it formed small round, opaque and grayish colored colonies that emitted little, if any, gas, but which had an extremely fetid odor. Inoculated into the guinea pig it produced abscesses. The anerobic organisms were much the more numerous of the two.

### On Certain Ocular Analgesics, And The Action Of Dionin.

DARIER, Paris. (*La Clinique Ophtalmologique*, 25th March, 1900.) Hoping to obtain a stimulating effect upon the lymphatic system and thus favor the absorption of atropin in a rebellious case of iritis, Darier discovered by accident that dionin possessed remarkable analgesic properties, which lasted for two days. At the same time, after its application, he says, the eye improved rapidly. This result led to other experiments.

He believes that until the time that experimentation shall have given a precise explanation of the mode of action of dionin, it is sufficient for us as clinicians to know that we are in posession of a powerful ocular analgesic which is capable of allaying for long periods of time the most violent pains that are produced by iritis, iridocyclitis, ulcers, keratitis, and glaucoma. This discovery he states, is due to the clinical observations solely.

His method consisted in the placing of a small mass of the powder "about the size of a grain of wheat," in the conjunctival cul de sac. This application was usually followed by a primary blanching and later an intense chemosis and swelling of the conjunctiva. The latter symptoms soon passed off, and in about an hour's time the patient was feeling comfortable. In many instances, the relief from pain would last for a period of two days.

### The Theories of Accommodation.

M. Uribe, Troncoso, Mexico. (*Annales d'Oculistique*, March, 1900.) The author presents the theory of Carmona y Valle, comparing it with those of Helmholtz and Tscherning. Briefly stated, this theory, is that the act of accommodation is accomplished by a compression of the periphery of the crystalline lens through the action of the circular fibres of the ciliary muscle. This compression acting upon the anterior fibres of the zonule squeezes the soft portion of the lens, crowding it towards the centre and producing a thickening of that part. As the lens is supported posteriorly by the vitreous humor the anterior surface comes forward. By drawing the chorioid forwards the radial longitudinal fibres of the ciliary body assists in maintaining the position of the posterior surface of the lens. A lenticonus is thus formed. The slow recession of this lenticonus produces the phenomenon previously observed. The writer believes that if the accommodative act was produced by a recession of the lens the descent would be rapid and uniform, instead of by a series of movements as is really the case.

### Treatment of Congenital Ptosis by the Motais Process.

Dianoux. (*Annales d'Oculistique*, March, 1900.) The patient upon whom Dianoux operated was a decidely scrofulous girl of twenty-three years of age. There was a double congenital ptosis to such a degree that when the patient's gaze was fixed in a horizontal direction, her field of vision was contracted by the fall of the lid to such an extent that she could not see above a point situated three or four degrees below the horizontal meridian. She had no power to contract the occipital-frontal muscle. Leucomata in the cornea prevented any useful vision with the right eye. This was the one which was chosen for the primary operation. In this case an incision about two centimeters long was made in the eye-lid in the position that is normally occupied by the first palpebral fold. This incision was carried through the orbicularis muscle, a small portion of which was excised. The cut was extended through the cartilage in order to form a buttonhole about four millimeters long in the eye-lid. The lid was then elevated and an incision was carried through the ocular conjunctiva over the site of the superior rectus muscle. A portion of this muscle was loosened from its insertion and was dissected back so as to form a little tongue. One or more sutures were passed through this tongue, the ends were carried through the hole in the eye-lid and threaded to needles. By this means a series of sutures are inserted into the tarsal cartilage in such a manner as to bring the end of the muscle into apposition with the free edge of the cartilage. A bismuth dressing was applied.

From the first, the elevation of the lid thus obtained was remarkable. The movements of the eye-ball were not interfered with.

In operating upon the second eye, the sutures had to be removed on the second day on account of an abscess of the cornea produced by irritation caused by friction of the dressing. Nevertheless, the result was almost as good as that which had been obtained upon the first eye. Four months after the procedure the fields of vision had extended greatly upwards, particularly those for the left eye.

### Post-Operative Delirium in Ophthalmology.

FROMAGET, CAMILLE, Bordeaux. *Annales d'Oculistique*, March, 1900.) Fromaget adds two cases of this condition to the recorded list of post-operative delirium. They were both in old men. In each instance the patient suffered from marked reduction in the amount of urine daily passed, as well as from constipation. In one case the delirium disappeared under a very restricted diet in combination with the exhibition of purgatives. The other one became much better under this treatment, but he never recovered; dying from uremia about two months later.

The author calls attention to the role played by auto-intoxication in these cases and suggests that a great number of similar attacks could probably be traced to the same cause. The very fact of the extreme age at which patients are generally operated upon for cataract is in itself, he says, a source of constant danger of break-down of the excretory organs. As to the occlusion of the eyes entering in as an etiological factor, he believes that it acts simply by inducing sleep, during which condition the patient has dreams—these passing into delirium. That this may be the case, he believes has been proven by neurologists. The emotion and excitement, the confinement to bed, and the change in diet, all of which have been brought forward as causes of the disease, he thinks, probably constitute factors in nutritional disturbance.

**Visual and Ophthalmoscopic Expressions of Cardiac Origin.**

VALUDE, Paris. (*Annales d'Oculistique*, March, 1900.) The patient studied by Valude was a man of thirty-nine years of age. His face was cyanosed and the conjunctivae were of a yellowish red color with marked pericorneal injection. Examination revealed an hypertrophied heart but without valvular lesion. The urine contained neither sugar nor albumen. Vision was reduced to one-half of normal in the right eye and to one-twentieth of normal in the left. Both eyes were practically emmetropic. Ophthalmoscopic examination revealed a remarkably varicose condition of the retinal veins with some dilatation of the corresponding arteries. The veins were so dilated that they covered almost the entire ophthalmoscopic field.

Vision fluctuated somewhat, though it was better in the right eye. In somewhat over a month after the admission of the patient to the hospital, he died.

The autopsy revealed an exceedingly dilated heart with thickened and sclerosed walls. There were no valvular lesions. All of the thoracic and abdominal viscera offered the characteristic conditions which would accompany such a heart. The brain was exceedingly congested. Its convolutions were filled with dilated and tortuous veins. On washing the brain a blood discolored spot was noticed around the fissure of Sylvius and the angular gyrus on both sides, extending in one direction towards the occipital lobe, and in the other towards that portion of the frontal lobe which lies under the anterior ascending convolution. These portions of the brain were almost black from extravasated blood, although the entire surface of the organ was the color of wine dregs. On section of the brain, particularly in the right hemisphere, the gray substance corresponding with the angular gyrus was of a violet tint, this being due to petechial hemorrhages. The regions of the occipital and the ascending frontal convolutions were also slightly marked in the same manner, but not to such great degrees.

There was no change in the striated bodies or in the optic tract. The ventricles were normal.

The author believes that the lowered visual acuity was due to the central lesions.

### A Case of Retarded Cicatrization of the Corneal Wound Following Cataract Extraction.

QUERENGHI, FRANCOIS, Milan. (*Annales d'Oculistique*, March, 1900.) The evening before the time set for the removal of a cataract from a man, sixty-two years of age, Querenghi instilled atropin into the eye. During the night this was followed by an attack of acute glaucoma, the tension of the eyeball equalling plus three. The writer operated at the time and removed the lens. The external conditions abated and there seemed every prospect of recovery. The patient did not complain of any pain. Eserin, to counteract as far as possible the effect of the previously used atropin, was instilled. Four days later when the eye was dressed for the first time, it was found that the anterior chamber was not refilled, the corneal wound being open. Otherwise, the condition of the eye was good. All this time the patient had remained in bed. Eserin was again instilled and the eye was rebandaged. The patient was allowed to get out of bed for brief periods of time.

On the sixth day the eye was again dressed. The wound was still ununited and the upper margin of the cornea was slightly hazed. Eserin was instilled for the third time, and the dressing was reapplied. Two days later the eye was examined for the third time. The wound was healed and the anterior chamber was almost completely refilled. The corneal haziness had spread slightly, but as time went on it almost disappeared. The patient in the end made a good recovery.

Querenghi expresses the opinion that the retardation of cicatrization of the corneal wound was due to the outflow of the excessive amount of fluid in the eyeball that was dependent upon the glaucomatic process; and that when the effect of the atropin was overcome, the wound was permitted to close. He takes occasion to call attention to his own theory of the nature of glaucoma (a theory, of which, judging from his words, we may soon look for a fuller demonstration)—which is, that the disease is due to a passive or active hydropsy of the perichorioideal space, which extends from the insertion of the optic nerve to the point at which the chorioid joins the iris. The author considers that the beneficial action of iridectomy in glaucoma is due to the fact that the operation produces a communication between this lymph space and the posterior chamber.

### Conjunctivitis Due to Pneumococci.

HALLE, J. *(Annales d' Oculistique*, March, 1900.) Two cases of pure infection by the pneumococci of Talamon-Fraenkel type are described by Halle. In one the period of incubation was three days and in the other one week. Both patients recovered in a few days' time with little or no treatment.

### Syphilitic Chancre of the Bulbar Conjunctiva.

SOURDILLE, Nantes. *(Archives d' Ophtalmologie*, March, 1900.) Sourdille has been able to find twelve reported cases of the above nature. To these he has added an additional one. With the report he associates a thorough clinical study of the disease. In accordance with most syphilographers he feels that treatment should not be begun until the diagnosis is thoroughly established, which can usually be done only after the appearance of the secondary symptoms. The only local treatment necessary is the use of warm applications with the employment of an ointment containing iodoform or cocain.

### Epithelial Tumors of the Cornea.

KALT, Paris. *(Archives d' Ophthalmologie*, March, 1900.) Kalt is of the opinion that most of the tumors described under the name of epitheliomata of the cornea are merely papillomata based upon the results of an examination of an epithelial tumor which he has recently studied both macroscopically and microscopically, he says, such growths consist of three portions: I. The Corneal Layer. In it the lamellae are separated by rather large lacunar spaces, and the endothelial cells which although voluminous, are not increased in number. II. The Intermediary Layer. This is principally composed of fine fibrils. Among them certain fusiform cells and mononuclear cellular elements of irregular shape can be found. Many of the latter have the appearance of being cellular in type. They stain deeply with hematoxylin and are often found united into small masses. Some of them are also seen in the adjacent epithelial layer. A few capillaries may be recognized. The surface of the intermediate layer is slightly wavy. In places it protrudes considerably, giving the appearance of papillae. In these areas the number of nuclei are increased. III. The Epithelial Layer. This differs but slightly from the normal epithelium of the cornea. The base of this layer is composed of columnar cells with large nuclei which stain deeply. In the centre, Malpighian cells may be seen, and near the surface, corneal cells in the process of desauamation are noticeable.

In some situations the areas existing between the columnar cells and the intermediate layer were well defined. In some specimens that were stained with eosin, the protoplasm of these elements was seen to be of a fibrillar nature. These filaments became condensed for the purpose of forming an eveloping membrane, from which other filaments that were lost in the intermediate membrane started. They anastomosed with one another. In the folds of the meshes, cylindrical connective cells and some round cells could be seen.

### Researches Upon The Development Of The Lacrymal Passages In Man And Lower Animals.

STANGULANEAU, Paris. (*Archives d'Ophtalmologie*, March, 1900.) Stangulaneau states that in both man and the lower animals the lacrymal canal is formed primarily by an infolding of the ectoderm situated between the maxillary and the external nasal centres. This is gradually enclosed in the form of a cord of ectodermic cells. In man and some of the animals that he studied, this cord is found to extend from the nasal fossa to the lower lid; the upper canaliculis being formed from an outgrowth of the original "cord" of cells. In the case of the chick it is the lower canaliculus which is formed by the secondary outgrowth. The cord increases and a central lumen which becomes the canal is made. In the human embryo the lacrymo-nasal ducts and the canaliculi can be distinguished when the embryo has attained a length of from nineteen to twenty millimeters. By the time the embryonal length has increased to twenty-three millimeters the lower end of the canal has reached the nasal fossa. Into this, however, it does not open, as the lips of the canal are glued together. At this time, the cord is composed of an agglomeration of polyhedral cells with large nuclei. These cells are pale at the centre, but their peripheral portions stain deeply. When the fetus has grown to thirty-five millimeters in length the lower canaliculus is longer than the superior, which latter may be divided into a vertical and a horizontal part. At this time, the lumen of the canaliculae commences to appear.

It may be further noted that the eye-lids have closed and are glued together. Later the length of the fetus being about six centimeters the lumen of the canals is well formed and is lined with a prismatic epithelium which supports vibratile cilia. Their ends however are still closed. The fetus having reached a size of thirteen and a half centimeters, the superior canaliculus is found to have opened at the punctum. At this period the mucus is composed of prismatic cells that rest partly upon a basement membrane. The author has determined that there is but one valve which is constantly found; that is the valve of Cruveilhier, which is situated at the inferior opening of the nasal portion of the canal. It is, he says, frequently closed for a period of several days after birth. He has also found that Huschke's valve is sometimes present.

### Transformation of the Simple Loupe into a Binocular and Stereoscopic One.

BERGER, EMIL, Paris. (*Revue Generale d'Ophtalmologie*, March 31, 1900.) In constructing his loupe, Berger has placed the lenses in such a manner that they are decentered inward and their anterior surfaces are made to slightly converge. The advantages that he claims for method of construction, are that there is less strain on the internal rectus muscles, and consequently, there is less sensation of fatigue. He also asserts that a better stereoscopic effect is obtained.

He has applied the same appliance to opera glasses with good results, and suggests that it might be generally employed for lenses that are worn for hypermetropia and presbyopia. In using the loupe, he found that there is a central amount of astigmatic effect against the rule obtained. In the glass that is generally used by the author, this refractive change amounts to three-quarters of a diopter. As his own astigmatism is one-quarter of a diopter with the rule, the glass overcorrects it. To obviate this, he tilts the glass slightly in the horizontal meridian.

### The Courses of Elimination of the Intraocular Fluids from the Anterior Chamber and at the Posterior Portions of the Eye (Optic Nerve, Etc.).

NUEL, J. P., and BENOIT, F., Liége. (*Archives d'Ophtalmologie*, April, 1900.) The conclusions arrived at in this carefully prepared paper of Nuel and Benoit, are: 1. By far the greatest portion of the aqueous humor is eliminated from the eye through the anterior chamber. In the rabbit, an appreciable quantity escapes from the eye by the way of the optic nerve, following the course of the central vessels. This outlet at the posterior pole of the eye is non-existent or nearly so in man, the dog, the cat, and the chicken. It is possible that a very small quantity of the aqueous humor is removed by the large vessels of the retina.

2. In man, the evacuation of the intraocular fluid from the anterior chamber takes place for the most part in the iridocorneal angle, by way of the canal of Schlemm, the perforating veins, and the veins of the ciliary body: moreover, the vessels of the ciliary processes furnish to a certain extent a place of exit. A notable quantity of the aqueous humor is also evacuated at the junction of the iris to the iridocorneal angle through the openings that are situated in the anterior surface of the membrane at its extreme periphery. An appreciable amount of fluid penetrates the iris through the openings situated in its peripupillary zone.

3. The anterior surface of the human iris is the organ par excellence for absorption of the aqueous humor in the human eye. This fluid penetrates the membrane at its periphery and in the peripupillary zone through the openings or stomata that have been described by Fuchs. From

these points it spreads out through all the extent of the membrane, in the interstitial spaces, especially in the posterior layer of the iris; always traveling interstitially and through a fibrillar tissue of more or less loose construction. From here it is absorbed by the vessels of the iris, the capillaries, and above all, the veins. It is possible that a minute quantity of the fluid enters the iris in a diffuse manner throughout its anterior surface.

4. From all these channels, including the canal of Schlemm, the aqueous humor is finally passed into the veins and the capillaries. It penetrates these interstitially, through their walls by filtration, and in no sense through open mouths. It traverses the endothelial lining by insinuating itself through the endothelial interstices. The canal of Schlemm is a venous sinus and the aqueous humor finds entrance to it in the same manner as to other vessels.

5. Both the cat and the dog possess a canal of Schlemm as large as that which is found in man; only in the former animal it is placed more externally in the sclerotic.

6. Upon the whole, the iris of the dog plays a similar role to the iris of man, being possibly slightly less absorbent. The aqueous humor enters the membrane by its periphery, and its peripupillary zone, through veritable openings, close through these apertures, the liquid passes interstitially, finally emptying itself into the vessels just as in man. It is possible that the vessels of the ciliary body are more absorptive in the dog than they are in man. The canal of Schlemm and the perforating vessels, act as in man.

7. The cat's iris absorbs less than the dog's. The aqueous humor penetrates the cat's iris tissue through a great number of openings in the periphery of its anterior surface. On the other hand, the vessels of the ciliary body, which are extremely well developed, absorb more than those of the dog. The canal of Schlemm, or rather the perforating veins into which it empties, absorbs a slight amount of the aqueous humor.

8. In the rabbit, the iris absorbs but little if any aqueous humor. The absorption by the ciliary body also is less than it is in the dog and the cat; nor is that by the perforating veins any greater. On the contrary, the aqueous humor finds an important outlet at the posterior pole of the

eye, escaping along the central vessels in the intervaginal spaces.

9. In the chicken, there are two principal outlets for the aqueous humor. These are the canal of Schlemm and the anterior face of the iris. The vessels of the ciliary body aid but very slightly in this work.

10. In the rabbit alone, the aqueous humor escapes in a considerable amount along the central vessels of the optic nerve at the posterior portion of the eye. In the chicken, the dog, the cat, and in man, this passage is extremely insignificant in size; if indeed, it exists at all.

11. In idiopathic glaucoma, at least in the advanced stages of the disease, all of the passages by which the aqueous humor escapes from the anterior chamber, are more or less obstructed. In certain forms of secondary glaucoma, the anterior surface of the iris, and even the ciliary body can continue to absorb; but in every case, the absorption is much reduced. In glaucoma, vicarious evacuation by the optic nerve is never established.

### Researches upon the Anatomy and Pathology of the Lacrymal Passages in the Adult and the New-Born.

ROCHON-DUVIGNEAUD, Paris. (*Arckives d'Ophtalmologie*, May, 1900.) Rochon-Duvigneaud presents a paper giving a careful study of the lacrymal canal in both the adult and the new-born. In the latter, the canal has a marked curve with its convexity outward. In the adult, this canal tends to straighten itself. The author rather disregards the presence of valvules for which so much importance has been attributed by others.

One new case is added to the very small number of lesions previously examined post mortem. In this instance, the lower end of the canal was entirely closed by a thick integument. To open such a duct with a probe, he says, would be impossible, as a false passage would inevitably result. He suggests that such a closure would be successfully treated by first removing the anterior end of the lower turbinate bone followed by passing a probe down from above. The location of the lower end of the canal being thus indicated, an opening could be made to probe by means of the cautery. Believing the canaliculi to be the chief factors in removing the tears from the eyes, he says, that as their small lumen favors capillary attraction, it is in-advisable to lay them open. He has determined that two classes of closure of the canal may be found. In the first, the canal is impermeable at the lower end of the sac but is open both above and below. In the other class, the stenosis commences from below and gradually extends upward, the canal disappearing and giving place to a cord of new tissue. To this latter class belongs the case which is described by the author.

### A Contribution to the Study of Cysts of the Iris.

LAGRANGE, Bordeaux. (*Archives d' Ophtalmologie*, May, 1900.) Lagrange describes two cysts which he removed from patients coming under his care. The first was a pearly tumor of traumatic origin, and the second was an epithelial growth of congenital nature. Although the latter did not give rise to any troublesome symptoms until the patient (a boy) had reached the age of nineteen years, its histological features were too well marked to admit of any doubt in the author's mind as to its being congenital. He accepts the inclusion theory in explanation of its origin.

Examined under the microscope, its walls showed three layers: an internal one composed of from three to five rows of cubical epithelial cells; an intermediate vascular connective one, representing the middle zone of the iris; and lastly, an external one composed of the uvea.

### Ocular Hystero-Traumatism and Ocular Pseudo-Hystero-Traumatisms.

BOREL, Neuchatel. (*Annales d' Oculistique*, April, 1900). As the results of his studies in these conditions, Borel arrives at the following conclusions: 1. Ocular hystero-traumatisms are frequently undetermined; in fact, more frequently than statistics would lead us to believe. 2. Erythropsia, hemierythropsia, spasmodic astigmatism, monocular diplopia, spastic strabismus, nystagmus, mydriasis, epiphora with facial hemihyperhydrosis, and oculoglossolabial hemispasm, frequently exist alone; constituting what may be termed as monosymptomatic attacks of traumatic hysteria. 3. The visual phenomena, such as erythropsia, monocular diplopia, and vasomotor symptoms, such as epiphora and facial hemihyperhydrosis can be understood only by ascribing them to a central (cortical) lesion, and not to one that is retinal, lenticular, or in any way peripheral. 4. Ocular-hystero-traumatisms belong most frequently to the grave forms of hysteria, even when they appear in individuals who have never before shown a nervous symptomatology. This is particularly so in those forms of the disorder that are due to gross accidents during travel (railway spine of the English writers). 5. Hystero-traumatic strabismus is identical with that form of strabismus which is produced by hypnotic suggestion. 6. The vasomotor phenomena of hystero-traumatisms may be provoked artificially, by suggestion. This has been shown by our ability to produce lacrymation and a hemihyperhydrosis by provoking asthenopia. It is better to suggest simply the symptoms cited in the second conclusion than to attempt to reproduce the visual and psychic ones of hystero-traumatisms, as in the latter type, the patients are better able to simulate, which necessarily renders the experiment liable to the accusation of trickery; thereby destroying its value. 7. Even a slight ocular accident, to whose occurrence the patient may have paid but little attention, may have as a consequence an incapacity for work lasting for a period of longer than a year. After this, the type of the hysteria may become mixed in character (particularly in the male), and may be followed by a loss of the sexual sense. General trembling, curious contractures and anesthesias, with loss of sleep, apparitions of spasmogenic zones, transitory myopia, mydriasis, and photophobia of long duration, may all appear. 8. The provoked hysterical kopiopia produces its symptoms in the following order of increasing severity: (a), Micropsia; (b), monocular diplopia with bicolored images that increasingly separate, become more and more distinct, and vary as to their height on the horizontal; (c), epiphora with paralysis of the cutaneous vasoconstrictors of the face with commencement of the blue-red edema of Charcot; (f), facial hemihyperhydrosis; and (g) inconstant mydriasis with paralysis of the iris. 9. The external vaso-motor phenomena which are the causes of the epiphora and the facial hemihyperbydrosis, may reach the internal membrane of the eye leading to the suspicion of organic involvement; this type being seen particularly in cases of internal hysterical ophthalmoplegia and hysterical pseudomeningitis. 10. From the therapeutic standpoint, all operations are contraindicated, it being the diathesis of contracture that must be fought, and not the accidental localization area that the disease may affect.

### A Contribution to the Study of Dermoid Cysts of the Orbit.

LAGRANGE, Bordeaux. (*Annales d'Oculistique*, May, 1900.) Lagrange describes two dermoid cysts of the orbit which he removed, each meriting attention on account of some difference from the generality of such growths. The first was peculiar on account of its position, which was below instead of above the eyeball, and because its presence produced a pressure astigmatism of two and a half diopters with the rule, which disappeared after removal of the tumor.

The second was interesting from several standpoints. For fifty years it gave the patient but little trouble, and then became inflamed. Several years later, the author removed it. The operation was attended with great difficulty, as the growth extended far back into the orbit, lying close to the optic nerve. Moreover, the mass was partly surrounded by tissue that was so rich in veins as to appear like erectile tissue. Unfortunately, the damage done to the optic and ciliary nerves during the operation produced an irretreviable loss to their vitality. The operation was followed by a neuroparalytic keratitis and iritis, accompanied with hypopion. When these conditions had lessened sufficiently to permit of an ophthalmoscopic examination, the optic nerve was found to be inflamed. This was followed by a partial atrophy in which vision fell to one-tenth of normal. Examination of the growth showed that the epithelial layer of the tumor was destroyed. In its place was a typical cicatricial tissue in which sebaceous glands filled with cholesterin crystals could be found. Over almost the entire inner surface of this tissue, a thin layer of granulation tissue was visible. In view of the facts that the growth was deprived of its epithelial layer, which is to be feared in case of partial removal, and that its loss was followed by such serious damage to the eye, the author suggests incision and scraping of the mass as a better mode of treatment in such cases.

### Prelacrymal Tumor and the Method of Treating It.

ROLLET, Lyons. (*Annales d'Oculistique*, May, 1900.) Rollet compares the formation of prelacrymal tumor to that of a fistula in ano or a perivesical tumor. He practically divides the condition into two classes, so far as treatment goes. In the first he places those cases which have no direct communication with the lacrymal sac itself. These he treats by incising and curetting. On squeezing such growths there is no appearance of pus at the lacrymal puncta.

The second class includes those that commnicate with the lacrymal sac, which in itself is inflamed. In this type, the author believes the only efficient treatment consists in extirpation of the saç. In the treatment of the tumors of the first class, in which the sac is in a healthy condition, he strongly urges against the employment of probes which he considers do more harm than good.

### A Study of the Treatment of Lesions of the Lacrymal Apparatus by Electricity.

DU GOURLAY. (*Annales d' Oculistique*, May, 1900.) Du Gourlay has used his method in the treatment of sixty patients with the following results: fifty cures, many of which are now of long-standing; three cases that were notably ameliorated; four who are still troubled with slight lacrymation when in the open air; two left before treatment was completed; and one, which resisted treatment for a year, and although much ameliorated, was not cured.

He employs the agent in two forms: 1. The constant current as in electrolysis for the cure of strictures of the canal, and dilatation of the sac; and the stopping of catarrhal and even purulent secretion, with a greater intensity in the form of a battery of accumulators for electrocauterization; 2. The induced current as a muscle stimulant.

### A Simple Apparatus for Measuring the Amplitude of Accommodation.

NICOLAI, Nimegue. (*Annales d' Oculistique*, May, 1900.) The instrument described by Nicolai consists of a rod, one end of which is so shaped as to be situated at a point on the infraorbital margin. It contains a graduated rack on its upper side. In this there is placed a card that is adjusted to a proper moveable carrier. There is a handle on the lower side. Between the cord and the end to be placed against the cheek of the patient, and at a distance of nine and three-tenths centimeters from the end, a lens of a strength of ten diopters' strength is fastened. The moveable card bears a cross, the vertical portion of which is composed of three, and the horizontal of four lenses; each line being separated from its fellow by a white space of 9.927 millimeters in width.

When the card is placed at a point ten centimeters' distance from the lens, the rays of light from it enter the eye of the observer at the other end of the instrument in a parallel direction. Calculating by the formula that is applicable to the existing conditions, it will be found that each centimeter that the card is approached to the eye, demands an accommodative effort of one diopter to bring the rays of light to a focus upon the retina of an emmetropic organ: in other words, to allow the patient to distinguish the white lines between the black ones forming the cross. In the practical application of the instrument, the operator commences by placing the card at the end of the rack which is farthest away from the patient, and then bringing it gradually closer until either the perpendicular or horizontal lines can be distinguished. This point marks the far-point. The card is then brought gradually nearer the patient until the lines disappear, the point at which this occurs marking the punctum proximum. The difference between these two points designates the power of accommodation; each centimeter representing one diopeter of strength. The contrivance may also be employed for refraction purposes.

### Congenital Cataract in Relatives. the Influence of Consanguinity and Hereditary Neuropathy.

PISENTI, Perouse. (*Annales d'Oculistique*, May, 1900.) The patients studied by Pisenti, a man and his wife, were first cousins. Their mutual ancestral tree was filled with cases of epilepsy, religious mania, hysteria and tuberculosis. They had six children one of whom was healthy. Three were hydrocephalic idiots with bilateral congenital cataract and nystagmus. A fifth child had convergent strabismus, while a sixth died of tubercular meningitis.

### The Prognostic Value of Syphilitic Iritis.

TROUSSEAU, Paris. (*Annales d'Oculistique*, May, 1900.) Trousseau considers that syphilitic iritis is usually the forerunner of other grave manifestation of the general disease. Of sixty-one patients treated by him during the past seven years, he has been able to watch the subsequent history of forty. Of these, only six have so far escaped grave troubles. Nine have suffered from serious complications which have not invaded the nervous system. Three became affected with general paralysis, twelve became tabetic, eight had cerebral complications of some type, and two died most probably from syphilitic lesion.

### Orbital Cellulitis Consecutive to an Attack of Ethmoido-Frontal Empyema, Death Rapidly Ensuing from Suppurative Meningitis.

COLLINS and EYMERI, Chalons. (*Annales d'Oculistique*, May, 1900.) The case seen by these authors merits particular attention from the almost total absence of the classic symptoms of the disorder. The patient was a young soldier who at various times had been given leave of absence on account of ill health. Shortly before the last attack began, he had been discharged from a military hospital in which he had been confined on account of grippe. While on his way to another town, he was seized with a violent headache which soon became so intense that he was compelled to discontinue his journey.

On the left side of the temple, slight erythematous spots due to applications that had previously been made, were to be seen. The left upper eye-lid was swollen and had assumed a livid red hue. There was a slight rise of tension in the same eye, and its movements were somewhat limited. The headache was of the form of a left hemicrania. The right side of the head and face was normal. He complained of a pain in the right shoulder but no fluctuation was apparant. He had a rise of temperature of a little over a degree. The pulse was eighty. Purgatives and salicylate of soda were ordered internally, while leeches and hot boracic acid solutions were applied externally. The next evening the patient felt somewhat better. His temperature was about one hundred and two-and-a-half degrees, Fahrenheit, and his pulse was eighty-six.

During the following night, however, he became delirious and on the morning of the third day coma set in. Gradually, carphology, paralysis of the sphincters and a right facial paralysis were noticed, and on the fourth day, the patient died, his condition having been too serious to admit of the performance of any operative procedure. A post mortem examination confirmed the diagnosis of fronto-ethmoidal empyema. The pus had burrowed into the upper inner portion of the orbit. The membranes of the brain were all injected, though more violently on the left than on the right side. The cavity of the dura mater of the left side was filled with fluid in which many flocculi of pus could be seen.

### The Unjustified Abandonment of Jequirity.

MASSELON, Paris. *(La Clinique Ophtalmologique*, April 25, 1900.) Masselon calls attention to the fact that for some reason the use of jequirity seems to be slowly sinking into an undeserved oblivion. That it still remains the only form of therapy in properly selected cases, seems to him undisputable; and yet he says, some of the most recent articles on trachoma fail to mention the use of the drug. The few bad results from its employment which have been reported, have been, in the writer's opinion, due to the class of cases in which there is pannus or sclerosis of the cornea with regressive granulations from which there is so little secretion that the eyelids are scarcely if at all agglutinated in the morning.

He finds that the best way to use it is the following; The lids are to be everted and the exposed *cul de sacs* are to be pressed together so that the cornea is completely hidden. This done, a layer of freshly prepared powdered jequirity from which all oil has been freed, is to be dusted upon the palpebral conjunctiva. The thickness of this layer depends upon the degree of inflammation that is desired as does also the length of time that the drug is allowed to remain in contact with the lids. This time varies in duration from two to five minutes. After this, the lids must be carefully cleansed with a tampon of cotton that has been soaked in distilled water or in a solution of boracic acid. The application may be repeated in a few days' time, but as a certain degree of toleration seems to be established in such cases, it is better to secure a sufficient amount of inflammation in one or two sittings.

### Hemorrhagic Fungous Iridocyclitis Following the Couching of a Cataract.

IATROPOULOS, Constantinople. *(La Clinique Ophtal-*

*molgoique*, April 25, 1900.) Although it is rare that a physician sees the result of a couching operation at the present time in this part of the world, yet in Western Asia a great number of such operations are still done by wandering Arabs and Persians. The result of the procedure usually consists in a temporary improvement in vision, which rarely lasts as long as a year. Inflammation may or may not ensue, though when it does, it is generally of variable intensity. Occasionally, a sympathetic iridocyclitis occurs. It was to avoid this last complication that Iatropoulos removed an eye, the lens of which had been couched. When the eye was opened, instead of a cloudy lens such as is generally seen, there was a fungous mass resembling a melanosarcoma attached to the lower portion of the ciliary body. Numerous bloodvessels enveloped it and many hemorrhagic spots could be seen. The cataract, in an exceedingly thickened capsule, was enclosed in this mass. Many embryonal cells and some pigment cells were noticeable.

### Tuberculosis of the Cornea.

SENSBERG. (*La Clinique Ophtalmologique*, April 25, 1900.) Sensberg reports a case of tuberculosis of the cornea cured by the use of atropin, iodoform, hot applications. and an occlusive dressing following as complete sterilization as possible of the ulcer. The ulcerative area, which had existed for four days before the author saw it, was of about the size of a bean. Its borders were rounded and its surface was covered with a thick yellowish pus. All of the rest of the corneal membrane was opacified. There were ciliary injection, photophobia, and lacrymation. Vision was *nil*. The bacilli of Koch were found. The patient, a woman, had suffered from a lupus of the forehead for a long period of time. There was no pulmonary involvement.

### Cryptophthalmus Consecutive to Erysipelas.

SANTOS-FERNANDEZ, Havana. (*La Clinique Ophtalmologique*, May 29, 1900.) Santos-Fernandez's case was most interesting. There was no evidence of orbit, nose or ears. Two holes served for the mouth and nose. This condition was due to a neglected case of erysipelas from which the patient had suffered when an infant. The case had been treated by covering the face with mud.

### Metastatic Blenorrhagic Conjunctivitis.

FAGE, Amiens. (*Recueil d' Ophtalmologie,* "April, 1900.) Fage reports a case of conjunctivitis associated with much chemosis but little secretion. It occurred about the fifteenth day after an acute attack of gonorrheal urethritis. In eight days' time the disease was cured, but during this period articular symptoms appeared. No gonococci could be found in the pus discharges.

### Exenteration with the Aid of the Cautery in Panophthalmitis.

DE LAPERSONNE, Lille. (*Archives d' Ophtalmologie,* June, 1900.) The author's operation is performed as follows. The patient is anesthetized, and an incision extending from one side of the cornea to the other, or even beyond, is made. Two cuts at right angles to this, made with a scissors complete a crucial incision. The pus is allowed to escape and the crystalline lens is removed without touching the membranes of the eye. A large, knife-shaped thermocautery blade, heated white hot, is introduced and swept completely around the interior of the eyeball. As a rule, it is necessary to do this several times in order to remove any carbonized tissue that may be adherent. The pupillary region, especially should be well cauterized. This is followed by an injection of bichlorid or cyanid of mercury of a strength of one or two thousand. The stump is powdered with iodoform and an occlusive dressing is applied. For a few days the eye should be dressed twice every twenty-four hours, as there is considerable discharge owing to a separation of the slough. The pain usually disappears almost immediately after the operation. In from ten to twenty days' time the wound is healed. The advantages claimed for the procedure are, that it does not open the vessels and lymphatics and thus allow entrance of any material to the general system, and that there is an almost complete absence of pain during the convalescent period. Further, the radiation of the heat sterilizes the surrounding tissues and prevents septicemia and general infection by contiguity.

It is interesting to note that the operation was performed on one occasion with the aid of cocain anesthesia. The subject was an old man with a weak heart.

### Subconjunctival Lipomata and Dermolipomata.

LAGRANGE, Bordeaux. (*Archives d' Ophtalmologie,* June, 1900.) Lagrange presents a careful clinical and histologic study of three cases of subconjunctival tumors. In two, glandular elements, in connection with adipose tissue, were found. In the third, the most careful examination failed to reveal anything but adipose tissue. Serial sections were made and every fifth section was examined carefully. The author agrees with Rogman that pure lipomata do exist although their number is relatively small in comparison with the number of dermolipomata. He considers their origin to be always congenital. The lipomatous mass was not adherent to the conjunctiva, whereas in the case of both of the cases of dermolipomata, there were adhesions.

### Method of Exploration of the Anterior Portion of the Fundus Oculi (Comprising the Ciliary Body) with the Ophthalmoscope by Translucidity.

TRANTAS, Constantinople. (*Archives d'Ophtalmologie*, June, 1900.) Trantas has found that by pressing upon the sclera during the making of an ophthalmoscopic examination, certain portions of the fundus oculi which would be otherwise invisible may be pushed into view. By this plan, the ora serrata may be easily distinguished. The ciliary processes may be determined even by oblique illumination if the scleral coat is pressed in and the observer places his head as close as possible to the cone of light which illuminates the eye.

By transmitted light with this method, the position of the ora serrata may be distinctly seen in all eyes except those of the Negro. The light passes clearly through the adjacent parts, the ciliary body being located by the shadow it casts. In this way, certain pathologic changes, such as the presence of neoplasms or hemorrhages, cataract, etc., may be diagnosed.

### On the Extract of Suprarenal Capsule in Ocular Therapeutics.

DARIER, Paris. (*La Clinique Ophtalmologique*, June 10, 1900.) On account of its powerful vasoconstrictor action, the author has found this drug to be of much service both from a diagnostic and a therapeutic standpoint. As it blanches the conjunctiva before it does the deeper structures, it is valuable in diagnosing between a conjunctivitis and a scleritis or iritis. Between the latter two diseases there is the additional distinction that the injection in the case of a scleritis disappears irregularly, whereas the pericorneal zone of iritis fades out evenly. As is well known, intense injection of the conjunctiva renders the absorption of cocain extremely slow. This lack of action may be overcome by alternating instillations of cocain with aqueous solutions of the drug. Certain cases of glaucoma also yield much more quickly to the effects of miotics if these drugs are employed in combination with this drug.

### Hydatid Cyst of the Orbit.

ISOLA, Uruguay. *(La Clinique Ophtalmologique,* June 10, 1900.) Isola says, generally speaking, the prognosis for sight in this disease is considered good. That this is not always the case, is shown in his case. The tumor produced by the cyst was about the size of an orange. It had pressed upon and pushed the eye in front of it to such a degree that the organ had become atrophied. The removal of the cyst was accomplished without any difficulty.

### Sudden Changes in Ocular Refraction in Diabetes.

SOURDILLE, Nantes. *(La Clinique Ophtalmologique,* May 25, 1900.) Sourdille reports a case of a man, who, suffering from diabetes, suddenly noticed a failure in vision. While studying the refraction it was found that he had two diopters of hypermetropia, and that the correction of this brought the vision from one-sixth to full acuity. The diabetes was successfully treated in so far as the amount of urine excreted was concerned; and the hypermetropia disappeared. During the hypermetropic period tension was slightly below normal, but this condition disappeared with the disappearance of the hypermetropia. The author feels that the least improbable theory in regard to the causation of these sudden refractive changes, is an abstraction of fluids from the vitreous chamber, the fluid being replaced by blood which is overladen with sugar.

# ABSTRACTS FROM SPANISH OPHTHALMIC LITERATURE.

BY ALBERT B. HALE, M. D.,

CHICAGO, ILL.

Quarter ending June 30, 1900.

### Hemeralopia Cured by Injection of Physiological Horse Serum.

SANTOS FERNANDEZ (*Archivos Medicos*, of Cadiz, April, 1900.) adds three new cases of hysterical hemeralopia coming on suddenly in the night with total loss of vision, all of which were completely cured by the injection of Horse Serum. This makes five cases in which he has tried the method and thinks it of great value.

### Sympathetic Ophthalmia.

SANTOS FERNANDEZ, (*Cronica Medica Quirurgica de la Habana*, April, de 1900.) Sympathetic Ophthalmia, is discussed by Santos Fernandez, with the analysis of 27 cases in which he suspected the condition. He says that in a few cases the picture was complete and demanded the diagnosis without any doubt whatever, while some illustrated the differences arising in practice, especially where the fear of the patient has to be overcome.

In four of the cases there was no traumatism whatever and yet enucleation was performed for fear of sympathetic trouble. In others the iritis etc., was cured without resort to enucleation. Three cases were operated upon to put an end to suffering. In five cases there were non-penetrating injuries of the eye first affected and in these the symptoms of sympathetic trouble were most pronounced. In nine others traumatism was demonstrable, in some of which the evil influence of some agent like syphilis or rheumatism could be shown. The author deduces from this that enucleation should be practiced wherever suffering or time can be saved to the patient, for even without traumatism or inflamatory signs we cannot say that sympathetic ophthalmia can be avoided.

### Serpiginous Corneal Ulcers.

EMILIO ALVARADO (*Valladolid,*) publishes a study of the cases occuring in his Clinic during 1898, and 1899. He has seen a serpiginous ulcer in 57 out of 348 cases of keratitis, 44 were males and 13 females; five were from 20 to 30 years old, 12 from 30 to 40, 14 from 40 to 50, 15 from 50 to 60, 8 from 60 to 70 and 2 older than 70. The ulcer has been called the Reapers' Ulcer but he has found it less frequently during the time of pruning the vines than in the cutting of brush in the mountains or gathering of chestnuts or olives in the northern provinces. In Castile it was seen frequently in the summer because at that time there are more persons engaged in farming industries. Every traumatism produced during reaping time does not result in serpiginous ulcer and the author therefore attributes it to a certain severe infection which the sufferers carry on their own body, because they never wash their eyes and always rub them with their dirty hands after they have been injured. For this reason, the author tries to insist upon the utmost cleanliness, although he finds it very hard to carry out his methods. A simple bichlorid wash of the conjunctiva immediately after the injury, has seemed to him to give the greatest benefit.

### Some Practical Points in the Treatment of Ocular Syphilis.

ANTONIO ALONSO, San Luis Potosi, (*Anales de Oftalmologia*, January, 1900.) discusses the problems presented when syphilis affects the eye. He thinks that no manifestation of disease arouses greater interest than it does here or demands greater study or imposes greater responsibility upon the physician. He limits himself, however, to discussing the affections of the cornea, the uveal tract and the retina. The hereditary form is the most important affection of the cornea. He rather sides with the French school in assuming that syphilis is not absolutely and always the cause of such a keratitis. He admits that acquired syphilis may also affect the cornea in the same way or may show itself (and then very often complicated with severe iritis) in much the same way as punctate irido-cyclitis. He reports three cases in young adult men where the disease showed a circumscribed form, appearing only in the eye, with some infiltration which occupied about the center of the cornea with very little vascularization which yielded rapidly to treatment. There was one case of undoubted heredity; in another it was not acknowledged and in the third there was complication of rheumatism. In another case, a man of 32, he found in both eyes a grayish infiltration, but very shallow, although it covered nearly all of the cornea. With the magnifying glass this was resolved into numerous partial infiltrations. There was a very moderate vascularization. In still another case, a man of 30, of undoubted syphilis, the keratitis embraced the whole of the cornea with tremendous reaction and complete involvement of the iris. It is concluded therefore that the partial keratitis appearing in adults is almost always congenital, although it may have some other origin.

He questions whether there are other characteristics besides age, antecedents or the Hutchinson sign which will distinguish the inherited from the acquired syphilis. From what he has observed it seems to him that acquired syphilis shows itself more frequently in the partial form (monocular) and when it embraces the whole cornea it does not proceed across the cornea. Moreover the iris in the acquired form seems to be oftener involved.

Turning to the uveal tract and the retina he finds that these are favorite tissues for syphilitic manifestations, and that plastic iritis is the commonest. He supports Galezowski in the statement that the multiplicity of tissues involved is a chief indication of the syphilitic origin, e. g. if an iritis accompanies any retinal or corneal lesion or any muscular paralysis the diagnosis of syphilis should be confirmed.

Chorio-retinitis illustrates another manifestation. The ophthalmoscopic picture is a classical one. In discussing the treatment the author restricts himself to the modern ideas concerning the method of introducing mercury systemically.

### Amblyopia from Mal-nutrition.

ENRIQUE LOPEZ, Havana, Cuba, (*Anales de Oftalmologia*, March 1900.) gives some interesting observations made in Cuba during the time of the Reconcentration edicts from 1896, when Spain attempted to throttle the Rebellion by wholesale murder through hunger. This method produced a pathological condition in the suffering peasants with which the physicians practicing in Cuba became too unhappily acquainted. Lack of pure food, hunger, the ingestion of improper substances and in general the miserable hygienic conditions under which the peasant was obliged to live, worked slowly but progressively to develop the state of anemia characterized by great weakness, paleness, loss of all strength, edema, complete prostration and death. The victims died in the public highway without seeming to show anything but anemia. This weakness progressed without fever but with severe gastro-intestinal derangements. Almost all observers who had opportunity to study the blood of these patients with a microscope declare that the malarial organisms of Laveran were present and added to the final catastrophe. In many villages, one-third or even one-half of the people died. Sometimes it was almost impossible to bury the dead on account of the members. More than 300,000 souls perished. The author had numerous opportunities to study the eyes of these sick people and he hoped to be able to produce some symptoms or signs from them which would lead to an early recognition of the condition of starvation. Amblyopia was, of course, very prominent, and this showed itself especially after the siege by the American squadron had begun and during which time about all the poor people could get to eat was a little grain, some fruit, sugar or other innutritive substances.

From the cases of amblyopia every source of intoxication was excluded, consequently tobacco or alcohol which might produce some alteration in the media or the retina are not considered. The author selects 20 cases, of which 14 were women engaged in house labor and the other six were peasants, bricklayers or shoemakers. With the exception of two old people, they were all in the prime of life. In normal conditions these persons would have enjoyed good health, but they were in a state of very great physical misery when he examined them. This amblyopia was found in both white, mulatto or negroes, so it is evident race had no influence in its development, nor did sex or profession. The etiologic factor of starvation was therefore quite essential. In the majority of cases this amblyopia of mal-nutrition was unaccompanied by any lesion. In some cases there was perhaps a localization in the papilla. He observed a moderate neuritis in three cases, but he could not determine whether this was a congestive state or not. The most common objective sign discovered was a paleness of the papilla, most marked in its center. This neuritis did not correspond to the neuritis of intoxication. Accompanying it was a gradual loss of vision, from $^1/_3$ to $^1/_5$ or even $^1/_{10}$ below normal, ending finally in almost complete blindness. Both eyes were usually involved; some complained of a cloudiness at the fixation point, but the greater part merely said that their sight was getting bad, and in only one case was there hemeralopia. Clear vision was very often confused, otherwise he could find nothing distinctive—good nourishment seemed to be about all that was necessary to restore the sight. He sometimes used aconite during the congestive stage with good results. Kola, hypophosphites or other tonics were also of service, although in some cases the lesions resulted permanently. The author regrets that he could not find any exact sign which would lead to diagnosis of malnutrition from the symptoms alone.

### Iridoplegia in Contusions of the Eyeball.

FERNANDEZ (*Cronica Medica Quirurgica*, Vol. 24, page 275.) analyzes eight cases in which the traumatism was produced by a handball. Generally the iridoplegia was due to luxation of the lens accompanied by loss in the fundus, but if the light sense was preserved, and the iris was not unduly affected, the eye usually recovered. In one of the cases, where the blow was so great as to produce even some cerebral commotion, the iridoplegia was exaggerated and light perception was lost, but there was no injury to the fundus. The author gave a grave prognosis, but the sight was completely restored and the eyeball became normal again. With such an experience the author thinks the condition is not so serious as we might be led to suppose.

### Local Anesthesia in Enucleation of the Eyeball.

VELEZ, Mexico (*Anales de Oftalmologia*, April, 1900.) considers the problem of enucleation where there are contraindications to general anesthesia. He gets good results by using on the conjunctiva alone a 4% solution of cocain; after the first incision is made over the external rectus he uses a 1% solution, injecting beneath the conjunctiva two cubic cm.; this produces an edema all around the cornea which, in addition to the anesthesia it causes, also raises the conjunctiva so that the operation of supporting it and of seizing the muscular tendons is facilitated and can be carried out painlessly. The lid speculum is then removed, the globe is luxated between the lids which are allowed to fall behind it. The oblique mucles are then severed as they show themselves, and immediately after another c. cm. of 1 per cent. cocain is injected in the neighborhood of the optic nerve. The globe is then taken between the fingers of the left hand and the optic nerve and the tissue adhering to the globe are severed. The anesthesia of the conjunctiva originally produced allows time enough to introduce the stitches, if it is wished to place them.

### Tumors of the Choroid.

DEMICHERI, Montevideo, Uruguay (*Anales de Oftalmologia*, April, 1900.) tells of his experience in sclerotic puncture and direct electrical illumination for differential diagnosis between prolapse of the retina and tumors of the choroid. Sclerotic puncture has been employed by Hirschberg in order to reduce the retinal prolapse, and by it he was able also to discover a neoplasm when the ophthalmoscopic examination was made. Immediately after this Demicheri was led to the belief that retinal prolapses, in which there was not very much sub-retinal fluid, could be in all probability considered as due to tumors, rather than as being simply prolapses. In September, 1898, he enucleated an eye. It was immediately placed in a solution of formal. He tried an experiment on this eye, and was able to demonstrate that in the lower part of it there was an opaque zone back of which it was not possible to illuminate the pupil until the electric light was brought very close to the corneal edge. The eye was then cut in two by an antero-posterior section, when it was shown that a choroidal tumor occupied the lower portion of the eye up to within six mm. of the lower corneal edge. This tumor was brownish and very adherent to the sclerotic. Since the distance from the fornix of the conjunctiva sac to the inferior border of the cornea is 11 mm., it is evident that in this eye before enucleation there must have been a zone of from 4 to 5 mm. It was not possible to illuminate the pupil, consequently the anatomical examination of the eye fully confirmed the diagnosis, and emphasized the value of the diagnostic method employed, viz. direct electrical illumination.

### Meningocele of the Orbit.

LAGLEYZE, Buenos Aires. *(Anales de Oftalmologia,* May 1900.) Hernia of the brain is rarely seen at the internal angle of the orbit near the fronto-ethmoidal suture, only about 14 cases have been reported. Lagleyze offers a study of one which occured in about 100,000 cases of eye diseases. Its unusual site and the symptoms accompanying it, as well as the operation advised for it, prompt him to describe the case in detail. From a good diagnosis the operator may be led into serious errors( the author refers to the other cases in literature) since the pathology cannot be satisfactory to himself.

In July, 1899, he was consulted by a young Italian woman, 21 years of age, of good family history and of previous good health except that there had always been an excrescence over the right orbital region which had been growing since birth. A diagnosis had been made of Elephantiasis of the eye lids. She begged to be taken into the hospital and to be relieved of a trouble which made her largely an object of public charity. She looked so pitiable that no one would employ her. An operation was therefore determined upon. There was an enormous tumor over the right orbital region extending upward and outward, the temporal fossa instead of being concave was convex not only on account of the prolongation of the tumor but also through the increase in size of the bones covering it. The tumor seemed also to spread down over the cheek and even to involve the ear. The skin of the superior lid was stretched to the utmost. An ectropion was produced exposing the conjunctiva for nearly 3 c. m. The color of the skin was normal. The tumor was about the size of an orange and was soft, spongy and elastic. Above the tumor the bone could be felt but its anatomical shape was lost and the temporal fossa was globular. The frontal line could not be recognized. The movement of the lids was lost and ptosis was complete. On opening the lids the eye-ball was seen to be directed downward and the exophthalmos was so great that the globe seemed to be completely outside of the orbit. The globe itself presented nothing abnormal—the pupil reacted to light. On an ophthalmoscopic examination the papilla was moderately clouded and the retinal veins seemed somewhat dilated. The vision was reduced to 1/4. On exercising moderate pressure over the globe it seemed to cause no pain. The exophthalmos could be only partially reduced but as the globe was pressed back within the orbit the volume of the tumor increased. It was impossible to discover any fluctuation. The effect was that of a lipoma, only softer and more elastic. There was no pulsatile or expansive movement noticeable; otherwise the patient was perfectly comfortable. This tumor had been noticed from birth and she said that as a child she often amused herself by pulling on it, but that as soon as it was released it would return to its original shape. The patient said that in 1897 she had had an operation in Brazil but that after the surgeon had made the first incision over the lids the hemorrhage had been so great that they had not proceeded further. This hemorrhage lasted two days and after it ceased the tumor seemed greater. As has been said, a capable man had made a diagnosis of elephantiasis and as the patient came from a region in Brazil where that disease was very common, the reason for the diagnosis was obvious. If elephantiasis was not correct the most likely guess was lymphangioma.

With this impression a plan of operation was advised which would result in an esthetic correction and restore the eye to a condition of usefulness. On the 21st of July, 1899, under ordinary aseptic precautions and under chloroform an exploratory aspiration was made. The author was led to do this under the supposition that the tumor might be a hydatid cyst, as he had already operated upon 30 such cases; the aspiration then should be made immediately before the operation, otherwise there is great danger that if cystic fluid is allowed to escape into the tissues a great deal of inflammation will be produced, for it always has some poisonous substance in it. His surprise was very great, therefore, at obtaining the syringe full of transparent fluid. The question was then, was the tumor a hydatid or was it a meningocele? Were the changes in the eyeball a coincidence or really a consequence of an affection located deeply? An examination of the fluid was made at once, but the result was not precise enough, consequently he resolved to make a horizontal incision of 4 or 5 c. m. through the skin below the orbital edge. As soon as it was done, a large quantity of transparent liquid escaped. Upon introducing the right index finger a large cavity was discovered, into which the finger could be passed into the apex of the orbit. No evidence could be found of a break in the limiting membrane to the cyst except in the upper part of it toward the apex where there was an opening found, the lips of which were one cm. or so apart. The brain could be felt the whole length of it. On withdrawing the finger, after having made this exploration as delicately as possible, there was such an abundant venous hemorrhage that it was necessary to suspend the operation. A tampon was put through the cutaneous wound. He decided that he had an immense meningocele, without a cerebral hernia. The size of the meningocele had been great enough to prevent a proper circulation within the orbital regions, and chronic edema was therefore produced with all its usual consequences. No complication occurred after the operation, For the first few days the patient complained of great pain at the region operated on. In 20 days the cicatrization was complete. On the 21st of September, 1899, it was undertaken again. The appearance of the tumor had not changed. Now, the problem was, not only to accomplish an esthetic arrangement, but to put an end to the growth of the meningocele. It did not seem possible to save the eyeball and there seemed even a danger to the whole brain itself, but it was preferred to run the risk, doing everything possible, however, for the life of the patient. The eyeball was therefore at once enucleated and a great part of the orbit shelled out. The conjunctiva was then sutured together, and the eyelids united to each other. Cicatrization took place by first intention and was complete five days after the operation. The patient has remained very comfortable, and it is to be hoped that the operation will offer such an impediment to the growth of the meningocele that the defect will disappear.

# ABSTRACTS FROM AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

J. GUTTMANN, M. D.,

NEW YORK.

## Quarter ending June 30, 1900.

### More Recent Methods of Treatment for Trachoma.

ADLER, HANS, (*Wiener, Medizin, Presse*, February 11, 1900.) Trachoma, according to the most modern views, is undoubtedly of bacterial origin, even though we are forced to admit, that up to the present, the character of the bacillus is entirely unknown to us. The isolation of the causative bacillus would be of the highest importance to the practical oculist. Besides its importance for the therapy, such a discovery would help us very much in our diagnosis of these cases. Whereas at present there are some cases where even the most experienced specialist would hesitate about the diagnosis. As it is we still rely too much upon the result of clinical experience.

If we were to be guided solely by clinical experience we could state that follicular catarrh which is considered by a certain group of oculists to be identical in its nature with trachoma and to differ from it only in the degree of development of the disease, that these two processes are to be sharply distinguished from each other. Besides the fact that in follicular catarrh, the granules differ in their aspect and in their location from the granules of trachoma, there is also a marked difference in the course and in the sequelae of the two diseases. The granules of follicular catarrh disappear by absorption and without ever affecting the cornea or the cartilage. Such is not the case with trachoma. There are also other factors which are of importance in the differential diagnosis e. g. atropin catarrh, and certain grave catarrhal affections which sometimes appear after trauma. These are sometimes mistaken by even experienced oculists for trachoma, whereas we know that these affections will quickly disappear if the patients are much in the open air and the treatment is discontinued.

The modern treatment of the disease begins with prophylaxis. This is borne out by clinical experience. The source of infection of trachoma is the muco-purulent secretion of the conjunctiva. We must therefore be careful that the conjunctiva of the healthy eye should not become infected by such secretion. The surest method of checking the spread of trachoma is (besides air and light) great cleanliness and the abundant use of water.

The author divides the newer modes of treatment of trachoma into three groups: (1) Medical, (2) Mechanica and (3) Operative.

1. Medical treatment.—First he mentions the use of antiseptics e. g. Corrosive Subl. 1-5000 to 1-100 as disinfectant and caustic. Hydr. oxycyanatum, Carbolic acid 2 per cent., Ichthyol, Pyoktanin, Iodoform, Creolin, B naphthol, Resorcin, all these remedies were for a time warmly recommended. Also the salts of silver, copper sulph. and plumbum aceticum.

2. Mechanical Treatment.—First the rubbing of the trachomatous conjunctiva with a swab which is saturated with sublimat (1:7000.) This is quite effective, especially in severe forms of follicular catarrh. For real trachoma this method of treatment is not very effective. He also mentions the massage with salves (Hydrargyrum, iodoform, sublimat) which among other methods of treatment is quite useful.

Cold and warm sprays medicated by various liquids (cuprum sulph., alum, solution of zinc) have been used in chronic trachoma quite often and with good results. Here also belongs the treatment with the galvanocautery. This in many cases gives excellent results. It does not irritate the bulbus, does not injure the healthy tissues, and it destroys each and every granule almost separately. Under cocain the operation is almost painless (with the exception of the granules located in the angulus and in the semilunar fold). It can be performed without an assistant, and without a lid holder. After the operation cold sublimat lotions should be applied for a whole week, at the end of which he makes a second application of the cautery. The number of granules to be destroyed at one sitting depends upon the case in hand, in some cases they are quite numerous. The after treatment with copper is very efficient. But it must be admitted that relapses follow the application of galvanocautery quite frequently, because it is almost impossible to attack every granule separately. But it is also true that not only the directly attacked granules, but also the neighboring granules disappear after such application of galvano-cautery and that such relapses can again be easily cured.

He tried also electrolysis of single follicules. This treatment is more painful than the treatment with caustics.

3. Surgical Treatment.—He mentions only such methods which he himself personally tried.

Firstly, excision of single excrescences and folds as they appear in chronic trachoma. Then he mentions Schroeder's metal brush, by this the capsules of the granules are torn and the follicules are brushed. But he has noticed that this brush does more than the inventor of this instrument promised, it also tears the swollen infiltrated conjunctiva. The bristle brush of Abadie, he found, was not as injurious to the conjunctiva, but the effect on the granules was also smaller.

He then mentions expression of the granules. Occasionally during the eversion of the lid of succulent trachoma we will note that old soft granules of trachoma will burst, and that leads to a little bleeding and afterward to healing. This is easier effected if we place under the everted lid a small piece of wood or the handle of an instrument and express with our fingers the soft masses, Scarification of the succulent conjunctiva is often of service, but this must be done with care. To this belongs the systematic lancing of the granules and subsequent scraping with the sharp spoon. This method is recommended only in case of very large granules.

He dwells at length upon the squeezing method with Knapp's forceps. He was able to show very good results with this method. He also mentions the pincher of Kuhnt. This is a small knife with which he makes small incisions into the affected tarsus before squeezing with Knapp's forceps. Another instrument of Kuhnt is the expressor, by which only expression and no traction is used. He operated on several cases with this instrument and with a very good result. He considers this instrument very practical. After the method of Knapp as well as after that of Kuhnt there appears on the operated conjunctiva a grayish white membrane which after a short time disappears. After that he mentions the method of excision. This method consists (1) of the excision of the fornix conjunctiva, (2) of the combined excision of the entire fornix and the greater part of the cartilage. He does not speak very favorably of this method of treatment.

Relapses occur after each of these methods of treatment. He considers the removal of the follicles and the saving of the tissue of the conjunctiva as the most reliable mode of treatment. Then he mentions the treatment of Wecker with jequirity, who uses a 2 per cent solution. Dr. A. obtained excellent results with this mode of treatment especially in cases of pannus. In severe cases of pannus he uses also peritomy, in suitable cases he uses galvanocautery as peritomia electrica.

In conclusion he says that the treatment with antiseptics at the beginning of the affection often produces very satisfactory results. The treatment with lapis and cuprum sulfuricum is the most important remedy, but occasionally we have to change the remedies, because with prolonged use of one remedy on a mucous membrane the drug after a time loses its effect. Massage and medical sprays have in some cases been of very much use. If the medical treatment does not bring about a cure we use the galvano-cautery, squeezing and expression in suitable cases. In rare cases we may have to excise the fornix conjunctivae. But after each of these operative measures the after treatment with medicines is indicated. In all cases the modern, the mechanic, operative and the combined treatment shortens considerably the time of treatment. The course of the disease is also much milder. Severe corneal affections, pannus, disfiguration of the lids, distichiasis etc., hardly ever appear, if they have not been present before the treatment. For each mode of treatment there must be a positive indication, which can be acquired only after much experience.

### Disassociated Paralysis of the Eye Muscles in a Patient Suffering from Tabes.

KUNN, CARL (*Wiener Klinische Wochenschrift*, April 12th, 1900.) A patient suffering from paralysis of the right internal rectus is still able to use his right eye in fixation. If he looks to the extreme right the left eye turns inward to about the normal limit, while the right eye remains quiescent in the outer angle of the orbit, the left eye then returns slowly to the median line or slightly up or downward. These movements of one eye independently of the other shows a disassociation in the movements of the two eyes. The author has seen this phenomenon in six other cases of tabes.

### Phototherapy in Ophthalmology.

DAXENBERG, (*Wiener Medicinische Presse*, May 6th, 1900.) The author employed phototherapy in a number of eye diseases e. g. in chronic keratitis, chronic iritis with opacities in the vitreous, chronic choroiditis and in chronic retinitis after the usual modes of treatment had proved useless. He constructed for that purpose a special light box with 1375 candle power. The patient remains in this light box for 5—20 minutes and he is there exposed to a temperature of 30—80° C. The eyes should be covered with a bandage or with dark eye glasses, the head is covered with a moistened bandage which is frequently changed. Acute cases, photobia, habitus apoplecticus and diseases of the heart are contra-indications to this treatment. During and after light-bath the condition of the patient must be closely watched by the attending physician (auscultation of the heart, cool bath after the light-bath etc.) The author is of the opinion that the light-bath is a stronger resorbent than the steam-bath, which is also used for the same purpose.

### Serous Cyst of the Iris.

BONDI. (*Wiener Medicinische Presse*, March 31., 1900.) The patient visited the hospital for a different disease and was at first entirely ignorant of the affection of his left eye. The patient was asked to call oftener as the physician wanted to observe the "growth" a little longer. In August last year the patient was sent to a public hospital, where the case was diagnosed as malignant tumor of the eye and he was advised enucleation of that eye. But he did not consent to such an operation because he suffered no pain and because vision of the affected eye was not disturbed.

The growth which originally was half the size of a lentil gradually doubled its size and at the same time the patient noticed also a gradual diminution of vision. He was therefore referred to B. The patient can give no reason for the growth of the tumor and he denies trauma.

At first sight the tumor gave B. the impression of a malignant new growth e. g. a sarcoma, but closer examination with a lens and with a corneal microscope it became evident, that he had to deal with a cyst of the iris. This cyst has the form of a human lens. It involves the entire lower quadrant of the iris and fills almost completely the corresponding part of the anterior chamber. The apex alone touching the posterior surface of the cornea. The lower two-thirds of the anterior wall of the cyst is bluish gray. It is vascular, but still transparent.

In its upper part the anterier wall merges gradually with the normal tissue of the iris. The shape of the pupil is obliquely oval, it reacts promptly to light, the lens, the vitreous and the fundus of the eye are normal. The ocular tension is somewhat increased. Vision is 6/10. The cornea appears to be perfectly normal, and there is no trace of a previous injury or inflammation. This fact is rather important, because the majority of cysts of the iris recorded up to the present are chiefly of traumatic origin and cysts of the iris without any history of trauma are decidely rare.

It is also interesting to note that the patient now desires to have the eye enucleated, but considering the present diagnosis enucleation of the eye is out of the question, because there is only one absolute indication for enucleation of a seeing eye and that is an intraocular tumor. The treatment of cyst of the iris consists in the removal of the cyst, because if left to itself would probably destroy the eye by secondary glaucoma. Diminution of a cyst has also been observed to follow medical treatment, e. g. instillation of eserin, but in this case the instillation of eserin for 5 days produced no change in its size.

### Does Amblyopia ex Anopsia Exist?

KLEIN, S., (*Wiener Medicinische Wochenschrift*, May 12, 1900.) This question has recently gained very wide discussion, without, however, any definite conclusion being reached. The author thinks that if he is able to show by his cases that an amblyopic eye, which has not been used for a long time, on account of certain changes does again come into action, and if the vision of this eye is by this procedure gradually improved and reaches in course of time the normal limit, that this would tend to prove quite obviously that the previous amblyopia was simply the result of discontinued use of the eye, for as soon as the visual function of the eye was restored the amblyopia disappeared.

To illustrate the above he mentioned the following cases: girl, 18 years of age, complained of poor vision in September, 1882. The examination showed an intense opacity of the vitreous and detachment of the retina. Ocular tension was considerably diminished. Her history did not show any cause for the affection. A high grade of myopia was excluded and the urine was normal. Vision was poor. She could count fingers at 1-2 meters. The field of vision was limited in its upper half. K. advised perfect rest in bed, and also injections of pilocarpin. The patient stood these injections well, and the result was that the opacities of the vitreous disappeared after three weeks, and an ophthalmoscopic examination was now rendered much easier. The detachment of the retina remained unchanged. The ophthalmoscope showed in the anterior part of the vitreous a growth which gave the impression to the author that he had to deal here with cysticercus. Repeated examinations only confirmed his previous impressions. As the pain and intense inflammation continued steadily and the patient became in course of time entirely blind, enucleation of the afflicted eye was advised. On further questioning he found that the affected eye was the one which the patient was in the habit of using, as the other eye had always been "weak," the examination showed a high degree of myopic astigmatism and amblyopia. Fingers could be counted at 1-2 meters. Correction with glasses was without any result. The affected eye was enucleated, and 3-4 weeks after the operation the patient was quite satisfied with her condition, especially with the acuteness of her vision. Objective examination soon confirmed the opinion of the patient. Vision had increased to about half of the normal, and eight weeks after the operation vision had improved with — 2.75s to about $^1/_5$ of the normal. She could not read Sn. $3^1/_2$ with + 2.5s. Afterward, V = $^1/_3$ and Sn. 3 could be read without any glass. After that the patient was loss sight of, and it could not be ascertained whether the improvement of vision continued. This case proves obviously that as long as the good eye remained healthy, the other eye was almost entirely blind and not used. But as soon as the patient became compelled to use this eye the acuteness of vision increased continuously in compartively short time.

The author has observed a similar case lately. A laborer injured his left eye by a splinter of iron, which entered the interior of his eye. This was extracted by a magnet. But vision was not improved by the operation, for, in spite of the operation, plastic exudation into the vitreous made the eye almost totally blind (movements of the hand immediately in front of the eye.) The right eye of the patient always had poor vision. According to his statements he could hardly count fingers immediately in front of his right eye. Two months after the injury he asked for glasses, as he thought that this would increase the acuteness of his vision. Examination showed a high degree of hypermetropic astigmatism. He could not count fingers at 3 meters, with +4 at 6 meters. Without a glass he could not read with +6 O. D. J. 9. This improvement of vision was remarkable, if his statement was correct. The patient himself, without being asked, asserted that the right eye, which previously had been of no use to him, had improved very much after the loss of the good eye. After that the patient was lost sight of. Similar observations may be also made in cases of congenital cataracts, if removed by an operation. A boy 14 years of age had, before the operation, only a quantitative perception of light, after the operation he could count fingers at $^1/_3$ meter. By methodical exercise for three months this eye had $^1/_6$ acuteness of vision and could read J, 9. A further improvement could not be obtained, and this improvement of vision has now been stationary for three years. But as in this case the other eye was healthy and its vision perfect, this case can only conditionally be used in solving the above question. It is further noteworthy that in internal squint the squinting eye has very frequently, in the beginning of the squinting, quite good vision, which decreases only after long duration of the strabismus. This diminution of vision can be avoided by closure of the good eye. This separate exercise must be continued for many years, and, if possible, until after the stage of puberty. This is the condition on which a good result can be obtained. All this clearly shows that there exists an amblyopia ex anopsia.

The discontinued use of an eye in a very early period of life only tends to amblyopia. It is hard to fix a limit. But it seems that the fifth year, in most cases, is already a too far progressed period for that, as strabismus of the eye sets in much earlier—in most of the cases it begins already in the first or second year of life. But if the squinting begins much later, and the eye does not become amblyopic through some other cause (opacities of the cornea, etc.), it also remains free from amblyopia after the setting in of strabismus.

The widely-known case of a 60-years old cataract (Albrecht v. Graefe) without a diminution of vision is explained by the fact that the cataract developed in the 20th year of life, e. g., after the period of puberty. In this period of life amblyopia ex anopsia does not develope, and therefore the operation in the 80th year of life was quite successful. Furthermore, there seems to be a difference in the amblyopia caused by a cataract and that caused by strabismus and anomalies in refraction, especially if these have an influence on binocular vision.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

BY CASEY A. WOOD, M. D.

CHICAGO, ILL.

Quarter ending June 30, 1900.

### Bacteriological Researches and Brief Clinical Considerations and of Some Cases of Lacrymal Tumor.

RICCHI, *(Annali di Ottalmogiä*, 1899, XXVIII, No. 1,) reports in detail the bacteriological researches made in 12 cases of lacrymal tumor: one gathers from the enummeration of the species isolated that, among them, the micro-organisms proper to putrefaction predominate; especially the pyogenic and all others easily found in foci of suppuration which have direct connection with the exterior. In a later case he has found the *Actinomyces albus*, and in two others, the *Saccharomyces albus* and the *Saccharomyces minor*. The presence of the Actinomyces albus in the contents of lacrymal tumors is more common than generally thought; till now its presence was intimately connected with that of the so-called dacryoliths, but in this case the Actinomyces was not accompanied by any concretions of this kind. Subcutaneously injected into Guinea pigs there was no positive result but on intraperitoneal inoculation a pseudo-tubercular nodule appeared on the surface of the omentum. Making new cultures from this nodule, and successive subcutaneous injections, he obtained an increase in the virulence of the micro-organism, which was capable of killing adult Guinea pigs within six days after inoculation. He thinks that this species should not be compared with the suppuration in the case isolated, from the fact that the colonies obtained from the pus were too little numerous and because, on direct examination of the secretion itself, the characteristic filaments which are found in suppurations of recent date did not appear.

The two Saccharomyces were totally inactive, and the inoculations made with Guinea pigs in various ways always gave negative results; therefore their discovery has no value other than that which might be attributed to the finding of any common saprophyte. Finally, after some clinical considerations of the pathogenesis and ordinarily benign conduct of the lacrymal tumor, he concludes that "the non-malignancy, with which the lacrymal tumor generally runs its course even in the most intense forms, should be sought, not in the symbiosis of micro-organisms, but in the special anatomical and physiological modality of the organs which limit the morbid process to the lacrymal sac and favor its resolution, forcing its contents to discharge themselves externally or into the nasal cavity." *Bardelli.*

### A Peculiar Form of Symblepharon.

DE-BERARDINIS, *(Ibid.)* has observed at the Naples Clinic a form of symblepharon where the convex edges of the tarsi are joined to one another by a little membrane of a grayish-rose color. This color was also seen on the bulb, which exhibited perfect movement in all directions. This membrane, from its appearance at the objective examination, its non-adherence to the bulb and the integrity of the conjunctival arches, should be considered as formed in small part from the conjunctiva of the convex edge of the tarsus, which by a peculiar process have become joined again, and for the greatest part from the conjunctiva of the inferior arch which has gradually become distended. This is confirmed by the histological examination which shows clearly the structure of the conjunctiva. The origin of this form should be referred to a very severe conjunctivitis in childhood, improperly cared for. Except for this small membrane, the eye was normal. *Bardelli.*

### Primary Syphiloma of the Conjunctiva.

DE-BERRADINIS, *(Ibid.)* reports a case observed in a man, 26 years of age. The upper eye-lid was much reddened and so swollen that it almost completely covered the cornea. No success attended attempts to raise it, for it was very hard; nor was it possible to turn it back without the aid of instruments. The eyelid being turned inside out, a spot was noticed in the vicinity of the superior conjunctival arch, this was round and about the size of a silver five cent piece with a rough surface of a reddish gray color, well circumscribed but here and there lacking a definite border, as it was elevated or depressed, above or below the surrounding conjunctiva and the superimposed tissues. The affected conjunctiva was of remarkably hard consistency, as if it were a cartilaginous nodule in the midst of the eyelid. The inferior eyelid was slightly reddened and tumid, but quite soft everywhere and easily movable,

In general, the patient had a florid aspect, was well nourished and, did not show any cutaneous efflorescence. On palpation only the left preauricular ganglion was engorged, was of the size of a small pea, movable, and indolent: all the other ones, particularly the retrocervical, the inguinal and the epitrochlear, were entirely unaltered.

Notwithstanding that all amnestic data were wanting, it was thought, with the necessary reservation, that this might be a primary syphiloma of the conjunctiva, in fact, various symptoms afterwards appeared presenting the characteristics of the disease. *Bardelli.*

### Lymphosarcoma of the Plica Semilunaris.

DE LIETO VOLLARO, *(Ibid.)* adds a new case to the scanty observations, hitherto known to science, of primary tumors of the plica semilunaris. This was noticed in a little girl of 13 years in the region of the internal angle of the right eye—a small tumor arising about 5 mm. from the cleft of the eyelids, of the form and size of a large chick pea, somewhat depressed transversally and placed with its greater diameter vertically. On accurate examination, it was seen that this little tumor, inserted in the region of the plica semilunaris, leaving, at its inner side, the lacrymal caruncula perfect in form and it its relations to the contiguous parts and, on the same side, a depression sufficiently deep to divide it from the globe of the eye. Its color was yellow-red and of hard-elastic consistency. It was covered with conjunctiva of normal appearance. The neoplasm was quite mobile; one could displace it in various directions without rotating the bulb.

On the histological examination of the tumor there was noticed a special lymphadenoid structure, similar in all respects to the various lymphatic formations of the body, but with which, however, the plica semilunaris is unprovided. The name lymphoma, (according to Ziegler, should be properly applied to this form of tumor; but since this name is ordinarily given to some forms of hyperplasia of the lymphadenoid tissue (as the leukaemic tumors, etc.,) which sometimes arise idiopathically and at other times are accompanied by inflammatory phenomena, the name of lymphosarcoma or lymphadenoid is given to these new growths of lymphadenoid tissue, heteroplastic or not, which have properties identical with sarcomata.

Finally, it should be noted that the conjunctival epithelium of the external part of the tumor had lost the characteristics of squamous epithelium, tending to assume those of cutaneous epithelium with pigmentation of the elements of the deep stratum and the formation of a corneal stratum at the surface. *Bardelli.*

### Lymphosarcoma of the Lacrymal Gland.

DE LIETO VOLLARO, (*Annali d' Ottalmologia*, 1899, XXVIII, No. 2,) demonstrates this neoplasm which, by the way, rarely attacks the lacrymal gland. In ophthalmologic literature there is only a single previous observation, by Haltenoff, of such a growth.

The tumor developed slowly, pushing the left bulb forward and downward and occupied the external half of the orbito-palpebral sulcus: it rose more than 2 cm, beyond the level of the eyebrow and had the form and size of a large walnut, with its greater axis along the sulcus just mentioned. The skin was normal, non-adherent, but with a tuberculated surface. The consistency of the tumor was hard-elastic.

The histological examination of the tumor showed a form of sarcoma which, in its fine anatomical constitution, exactly reproduces the structure of lymphadenoid tissue. The neoplasm originated in the interlobular connective tissue of the gland. *Bardelli.*

### Clinical and Bacteriological Observations of Chronic Conjunctivitis Due to the Diplobacillus.

BIETTI (*Ibid.*) publishes 34 observations; from these it seems evident that the conjunctivitis of the diplobacillus generally begins slowly, preferably manifesting itself at the angle of the palpebral cleft. The conjunctival secretion is less during the day than toward the evening hours. During the night a little secretion accumulates, especially towards the inner angle, in which the diplobacilli are very easily found. The hyperemia of the conjunctiva. whether bulbar or palpebral, is not very considerable, being more marked at the caruncula. The subjective disturbances consist in a slight degree of photophobia and in the difficulty of working by artificial light. The vascular injection at the commissures extends gradually to the remainder of the palpebral margin and is even diffused over a part of it, assuming then the appearance of a true eczema. This form of conjunctivitis and all its complications are cured almost exclusively by preparations of the salts of zinc. *Bardelli.*

### Symmetrical Papilloma of the Lid Margins of External Canthi.

Colucci *(Ibid.)* reports a case of formation of papillary excrescences, placed along the posterior angles of the lids. All these excrescences were sessile and resembled in their appearance acuminate condylomata. The palpebral fissures of both eyes were somewhat blocked by these growths that arose from the posterior angle of the free margins of the lids. This was reddish in color, of a fleshy consistence and dentate at its free border, finer than at its base. The anatomic examination showed that the papillary new growth was due to a hyperplasia of the papillae of the corium, corresponding to the posterior lip of the palpebral margin and to an accentuated proliferation of the epithelium, which everywhere respected the limits of the connective tissue and, not receiving any infiltration from the same, preserved unaltered the characteristics of protective epithelium.

### Electricity in the Diagnosis of a Sub-retinic Cysticerous Extracted Through the Sclera.

De Vincentis *(Ibid.)* publishes on this subject a most interesting work which deserves to be fully reported. A young man of 27 years, and according to his own account generally healthy. A month and a half before he applied to the Clinic at Naples, he was suddenly affected by intolerance of light and much lacrymation in the left eye, and a little later with this eye he saw objects surrounded by a mist that became more and more fixed, while the photophobia and the lacrymation ceased. On entering the Clinic: O. D. emmetropia V=1, normal. The left eye appears normal, only the pupil is somewhat dilated on closing the right eye and reacts more feebly to the light; the tension is slightly diminished; V=1/60. There is a defect in the visual field, triangular in form with a large base (above and below 55° and at an inclination of 20° to the median line) that gradually advances forward in the temporal half and terminates in this, with the apex displaced 10°, thus invading the point of fixation. Indirect ophthalmological examination showed a small opaque point at the inner side of the posterior pole of the crystalline lense, but in all other respects this and the vitreous body were transparent. The papilla was rosy at the center, whitish at the periphery; it was quite clearly defined for 3/4 of its margin from the surrounding retina, but not for the remaining fourth, this was seen to be continuous with a white optic zone, extended into the retina to near the macular region in two parallel white striae, bordered by the cloudy retina. This turbidity of the inner side (image reversed) of the retina became more accentuated farther from the papilla. Several papillary diameters a little below and inwardly from the disc a wrinkling of the retina was noticed with its folds concentric with the papilla. Those gradually became once more level, quite broad and spread out, not recognizable except by a slight change in the transparency of the retina, as well as in the apparent size and the behavior of the retinal vessels. Above the papilla and a disc-diameter from it, two very small retinal folds were seen but, higher up, all the superior sectors of the retina as well as the external inferior ones were normal in transparency and as regards the vessels. Contrariwise, on the retinal sector situated inside the papilla, and below for about 10 papillary diameters a part of the retina is detached, very tense and slightly broader than high. There is a swelling on the detached retina where it becomes level with its upper external margin. Its margin towards the papilla is bluish while the more pointed part on the other side is white and finely granulated. On this bluish-white tumor, the retinal vessels run; they appear large but obscured and as if they were interrupted by the border of the swelling. Across the more pointed part of the same, but at a considerable depth from it, a white body with a margin not well determined might be seen, which after several observations, (although it seemed always to be in the same situation,) did not appear to have constantly the same form. It was not possible to discover any oscillation of the wall of this vesicular detachment on the bulbar movements.

By the passage of the galvanic or Faradic current, however, (the poles applied to the temples and interrupted,) variations were noted at once in the interior of the swelling which showed the retraction of a semi-transparent mass contained in it. These consisted:

1—Of the rising inside the swelling, of another bluish object whenever that gradually moved away from the border of the retinal swelling, from which it was separated by a well defined falciform space.

2—A delicate superficial movement, in the interior of another part of the retinal swelling, which showed successive changes more or less clear; as if behind a translucent cloud, one might see another in motion, differently illuminated.

These movements being almost synchronous with the opening and closing of the electric current, there seemed no doubt as to the diagnosis of subretinal cysticercus. The patient underwent a successful operation and two months after the tension was normal, the field of vision had improved and V=2/60.

This case gives occasion to the author to make some interesting considerations on the diagnosis and the therapy. He thinks that electricity may be used with much profit in not a few cases of intra-ocular cysticerci for diagnostic purposes. The only trustworthy treatment is surgical.

*Bardelli.*

### Acute Uremic Neuritis of the Optic Nerve.

ANGELUCCI (*Archio di Ottalmologia*, 1899, vi, fasc. 7) reports 16 cases of this disease from which it apears that, in acute uremic intoxication of the optic nerve, it is necessary to distinguish: 1.—A form which leads to papillitis with loss of large peripheric sectors of the field of vision or of macular vision.

2.—A form in which the papilla hardly shows any hyperemia, while a central scotoma, without lesion of the macular area or a limitation of the field bears witness to the existence of a retrobulbar process.

The nosologic types of intra-ocular neuritis from uremia are well defined, that is: a rapid rise of the papillary inflammation: sudden and very great diminution of the power of vision, sometimes with loss of central vision and large scotomata, sometimes with marked restriction of the field of vision; absence of any determining cause except a very noticeable and protracted augmentation in the urine of the urates as well as other uremic phenomena (calculi, gravel) or perhaps articular rheumatism; resistance of the papillitic process to every mode of treatment which does not tend to neutralize the excess of uric acid; rapid improvement of the vision and cessation of the process when the urine shows the return of the uric acid to the physiologic proportions. *Bardelli.*

### A Case of Retinitis Proliferans due to Malarial Infection.

TORNABENE *(ibid.)*, after having abstracted quite briefly the case, concludes that, to the causes pointed out by Wecks, palustral infection may also be added; malaria may be a cause of this form of retinitis by producing vascular changes and from the hemorrhages which it produces in the retina. *Bardelli.*

### The So-called Dilator Muscle of the Pupil.

FRUGIUELE *(Gazzetta Internationale di Medicina practica*, 1899, Nos. 1—2,) after a long and accurate critical review of preceding works on this subject, publishes the results of his own researches on the iris of the Guinea pig, rabbit, sheep, ox, cat, dog and man. He reaches the following conclusions.

1.—In the iris of man and the more common mammifers, there do not exist any other fibro-cellular muscles except those of the arterial walls and those of the sphincter which is rudimentary in some animals (ox, sheep).

2.—The membrane of Brucke, or of Henle is not muscular, but is an elastic membrane, whether in virtue of its morphological and microchemical properties, or its non-interrupted continuity with the elastic tissues of the choroid.

3.—The cellular elements in front of this membrane are fixed cells of the connective tissue; those behind—are epithelial elements pertaining to the anterior part of the retinal epithelium.

4.—In man the sphincter is placed on connective tissue—a thick, compact retro-sphincteric tissue which facilitates its function.

# ABSTRACTS FROM DUTCH OPHTHALMIC LITERATURE.

BY

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ASSISTED BY

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Quarter ending June 30th, 1900.

### Traumatic Iridiremia and Lens Dislocation without Rupture of the Globe.

TUYL A. (*Weekblad v. geneesk*, January 13. 1900.), describes the case of a farmer, aet. 64, who injured his left eye while pulling a pole out of the ground. Vision was lost immediatelly. He was seen the following day at the clinic when no vestige of an external wound could be found. The anterior chamber was filled with clotted blood. The elevated tension in this eye precluded any possibility of the rupture of the eyeball.

Two months later, vision = $^1/_{60}$, the anterior chamber was clear, and no iris tissue was to be seen anywhere. The vitreous was filled with brownish red opacities, but 8 weeks later there was little to be seen even of these latter, together with a few filiform opacities in the area normally occupied by the lens.—The lens was not visible, and the fundus reflex extended everywhere out to the corneal limbus. The fundus at this time was practically normal although the nerve head was rather hyperemic. No signs of retinal detachment or choroidal rupture could be made out. With oblique illumination carried far to the side almost parallel with the anterior plane of the cornea, the iris can be seen jammed back everywhere against the ciliary processes which the author thinks were also displaced slightly backward. Vision with + 10.00 D. S. at this time $= {}^{6}/_{36}$.

### Anomalies in the Vortex Veins.

SCHOUTE, G. T. ( *Weekblad v. geneesk*, March 10, 1900,) as exceptions to the rule that the vortex veins pierce the sclera in the neighborhood of the equator of the bulb, cites the 4 following cases:

Case 1. In a patient at the Leyden Clinic it was noticed in the right eye that one of the vortex veins left the eye very close to the optic nerve head. The radiations left no doubt as to the diagnosis. Two lines of retinal pigment laid over it, showing that the vessel belonged to the choroidal circulation. Moreover, by pressure on the bulb, the radiations became darker while the trunk of the vein at the nerve head became lighter in color.

Case 2. The second observation was made in a patient in the surgical clinic, who disappeared before an extended study could be made.

Case 3. A high myope of 20 D. In the right eye two anomalous vortices were seen. One collected the blood from the upper nasal quadrant and proceeded in an oblique direction to the margin of the nerve head where it disappeared suddenly. The other collected blood from the infero temporal quadrant, and reaching the margin of the nerve head almost opposite the other vein trunk, disappeared quite as abruptly. In this case, the radiations became darker and the vein trunk near the disc lighter on pressure, just as in Case 1.

Case 4. In this case, another high myope, the vorticose vein trunk came within one-half discs diameter of the disc and presented the same phenomena as the other cases.

### Probable Anomalous Persistent Pupillary Membrane.

SCHOUTE, G. I., ( *Weekblad v. Geneesk*, March 24, 1900,) found in both eyes, of a 15 months old babe being treated for cretinism in the Leyden General Hospital, a very fine whitish thread-like membrane lying close to the iris and forming a closed ring. Here and there in the iris it was attached to prominences, evidently similar to the iris stroma. In the right eye the membrane was attached also to the cornea. At no point in either eye was there any connection with the circular iridis mirror. A year later the thread in the right eye had disappeared at points, but there seemed little to show that absorption was taking place.

Schoute believes this case is similar to the one reported some time ago by Jeannulatos.

### Simulated Hemeralopia with Zonular Cataract—Operation—Recovery.

KASTER, W., (*Weekblad v. Geneesk,* March 31st, 1900,) speaks of a healthy young woman who could no longer perform the clerical work that fell to her daily lot because of the poor light where she worked. In strong light her vision was $^4/_8$ in the right eye and $^4/_5$ in the left eye. With reduced illumination the vision fell to $^4/_{24}$ in the right eye and $^4/_{18}$ in the left, notwithstanding that Kaster himself still has full vision, even with the reduced illumination. There was an accommodative power of 10 D. in each eye, and the pupillary reactions were normal. 4 cm. square discs of blue were recognized peripherally and centrally at $^1/_3$ meter, although rather slowly; $^1/_4$ cm. blue discs were not recognized at all. Under maximum mydriasis it was found that she had zonular cataract. The fundus was entirely normal. The patient submitted to extraction of the right lens, done exactly as in high myopia. The lens substance was transparent, gelatinous and intensely yellow. The result was vision of $^4/_4$ with +14.00 D. S. 2 months later the patient stated that she used the operated eye by preference, both for distance and near, although the latter part of her statement was untrustworthy.

### Accommodative Paresis after Acute General Diseases.

BYLSMA, R., (*Med. Weekblad,* March 3, 1900,) records 10 instances of paresis of accommodation all seen within a very short time. 3 of them occurring in adults were, in all probability, due to sausage poisoning. The remaining 7 were seen in children living in a district where diphtheria was endemic. Although all the children had had sore throat, none of them had been diagnosed by the health authorities as diphtheria.

# ABSTRACTS FROM SCANDINAVIAN OPHTHALMIC LITERATURE.

BY

A. BARKAN, M. D.,

SAN FRANCISCO, CAL.

AND

PROF. DR. KRUKOW,

MOSCOW, RUSSIA.

QUARTER ENDING JUNE 30TH, 1900.

### Some Cases of Iron-Splinters in the Vitreous treated with the "Giant"-Magnet.

BJERRUM, J. *(Bibliothek for Laeger J. R. X.*, pag. 369, 1899.) The author bases his paper upon the following nine cases treated by the "giant"-magnet.

I. Iron splinter penetrated cornea, iris and lens. Consultation one half hour afterward. Splinter could be seen as faint dark mass. Removed by magnet, but eye lost through panophthalmitis.

2. Splinter 3 days previous had penetrated cornea, iris and lens. After third attempt it was drawn out through entering wound. Inflammation soon disappeared: Tension —1; sight good; complete closure of wound.

3. Seen one and one half hours after accident. Splinter penetrated cornea, iris and lens; lodged in lower portion of vitreous. Removed after repeated attempts through corneal wound. Six months later a small secondary cataract developed. Final result, vision fair with + 12.00 D.

4. In this case the splinter was wrongly located in the lens. The small magnet was introduced after an iridectomy, without result. On the following day, splinter was drawn into anterior chamber with the "giant"-magnet and removed with forceps. Gradually iridocyclitis developed with occlusion of the pupil.

5. One day previous to the examination, splinter penetrated to the vitreous. It was drawn into the lens by the "giant"-magnet and removed completely with small magnet. Traumatic cataract followed. Vision $^5/_{18}$.

6. Splinter penetrated sclera close to limbus of cornea, one day prior to observation. After unsuccessful attempts at removal with magnets, the eye was enucleated.

7. Perforation of sclera at corneal margin. Condition had existed 24 hours. Splinter drawn out through original wound. Inflammation subsided in twelve days. Sight normal.

8. One day old. Perforation of sclera 5 mm. from cornea, beginning panophthalmia. Unsuccessfull with either large or small magnet. Eye enucleated.

9. Accident two hours previous. Perforation in sclera 4 mm. from corneal margin. Splinter removed through entering wound. Eye hyperemic but no complications.

### Operative Treatment of Immature and Partially Stationary Cataract.

WIDMARK J., Stockholm. (*Centralblatt für praktische Augenheilkunde*. Supplement 1899.) Author reviews different methods that have been advocated and their limitations. He advises direct extraction with older individuals and agrees with Hirschberg's statement that one should operate on persons over fifty years of age as soon as sight becomes noticeably impaired by cataract. Operation by expression after ample cut in cornea and careful opening of lens capsule whether cataract is immature, mature or over-ripe. Condition more serious in middle life. Author follows wholly Schweigger's indications.

1. Patients under 20 years—discission and eventually extraction.
2. Between 20 and 40 years, discission, for maturing of cataract—then extraction.
3. 40—55—60 years, first *cortextritur* then extraction.
4. 60 years, simple extraction.

157 cases treated in this way, 2 lost through suppuration. 98.5% good results, .65% partial, 1.3% failure.

Among 149 operated on during the same time for ripe cataract, one was half failure, distinguished light only.

### Observations in the Presence of Special Diseases in Finnland Based upon Conscriptions during Eleven years.

LINDEN, K. E. (*Tinska Läkares älskapets Handlmgar.*

Bd. 41. Hl. 1899.) Among other things Lindén gives the proportion of conscripts having trachoma as 4.2%, the percentage of distribution being lowest in districts showing greatest number of Swedes. The statistics show that practically only the Finns are affected by trachoma.

### A Case of Tumor of the Iris.

HELLEBERG, A., (*Nordiskt Medicinskt Arkiv.* Bd. X., H. 3, 1899.) Patient, 49 years, farm servant, had received a blow on right eye previously. Seven months ago visual acuity gradually reduced to fingers at one-half meter. Iris at lower outer quadrant presented a grayish red spongy mass, projecting anterior chamber and with illy defined borders, into upper inner normal part of iris. Strongly pigmented spots could be seen between iris and lens when eye rolled upward and outward. Tension + 2, diagnosed as a tumor, either of the iris or of ciliary body with secondary involvement of iris. Eye enucleated. Microscope showed an almost colorless, nodular, rodshaped swelling and two thin layers of similar structure, one between the lens capsule and relatively normal iris, the other more fibrous, between lamella of zonula zinnii. The strongly pigmented spots mentioned proved to be only the posterior pigment layer of the iris. Upon this histological structure the author made the diagnosis of leiomyoma, but because of the growth, with a certain reservation toward leucosarcoma.

### Experimental Investigations Concerning the Disinfection of the Conjunctiva.

DALEN, A. (Assistant in Eye Clinic, Seraphim Hospital, Stockholm.) The assumption grounded upon numerous investigations that aseptic cleansing of the conjunctiva is equivalent to antiseptic means, finds new support in Dalen's investigations. He determined the bacterial condition before and after disinfection, and treated in the same individual one eye with sublimate (1:5000) and the other with salt solution. The salt disinfection is superior, inasmuch as the sublimate even 1:5000 causes irritation of the cornea. Powerful antiseptics are excluded on account of their injurious effects upon the eye. From other experiments he finds under a binocular dry bandage an increase of bacteria in the conjunctiva, and that a damp antiseptic bandage is not altogether satisfactory. Powdered iodoform shows no influence upon bacterial growth, it is not dissolved by normal secretions; possibly it is changed by pathological ones.

The paper is closed with a description of the bacteria most frequently met with by him in the normal conjunctiva.

### Mechanical and Operative Treatment of Trachoma.

HELLGREN, U. L., Stockholm. (*Centralblatt für Praktische Augenheilkunde*, Supplement, '99.) The author makes statements of importance concerning mechanical and operative treatment applied to trachoma, based upon 42 well observed cases of trachoma and follicular catarrh which were treated by expression. 6 cases of follicular conjunctivitis healed completely (the latest 14 days) after the squeezing out. Of 7 cases of granulation 6 were fully cured (observation 3-4 years). In one case relapse after $1^2/_3$ years was cured by second treatment.

The expression was followed by an after treatment in which the eyelids were daily everted for two weeks and treated with a few drops of sublimate 1:1000.

In all remaining cases where there were already cicatrices in the conjunctiva, pannus or keratitis a marked improvement was noticeable. Pannus and opacity cleared up and irritation symptoms disappeared.

As complications of this treatment there were laceration and bleeding of the conjunctiva; and in 14 per cent. inflammation of the cornea, which however is limited to the periphery and does no harm. In spite of these complications author regards this as a valuable treatment.

# OPHTHALMIC NEWS AND ANNOUNCEMENTS.

(Under this heading the ANNALS will publish items of interest. Please address Dr. B. E. FRYER, 520 E. Ninth Street, Kansas City, Mo. )

Professor Wolfring, of Warsaw, has resigned his chair.

Dr. Sgrosso, a pupil of Vincentiis, died recently at Naples.

Professor Carl Mellinger, of Basel, has been made Professor in Ordinary.

Dr. M. Ohlemann will reside hereafter at Wiesbaden, at No. 24 Taunus street.

Dr. Best, now first assistant of the University Eye Clinic, is to become professor at Giessen.

Dr. A, Alt has become a member of the board of trustees of the St. Louis Medical Library.

At Strasburg Dr. Landolt, assistant at the University Eye Clinic, will be promoted professor.

Mr. Allen Dexter, M. B. London, has been made house surgeon at the Oxford Eye Hospital.

The well-known ophthalmologist, Van Millingen, died recently at Constantinople from pneumonia.

Dr. Scroczynski, favorably known as an instructor in the diseases of the eye, died recently at Krakau.

Dr. J. E. Kilvert, L. R. C. P., M. R. C. S., has been made senior house surgeon at St. Thomas Hospital.

Dr. R. O. Born has received the appointment of professor of ophthalmology at the New York Polyclinic.

Mr. Kenneth Scott, F. R. C. S., has been designated as surgeon to the St. Mary's Children Hospital, Plaistow.

Prof. Hirschberg, Privy Councillor, has been elected an honorary member in the Medical Society of Constantinople.

Ophthalmologists, as well as Neurologists, will regret to learn of the death of Dr. Landon Carter Gray, of New York.

W. T. Lister will succeed C. Devereaux Marshall as Curator at the Royal London Hospital, the latter having resigned.

Dr. Charles S. Blair, F. R. C. S., has been appointed assistant surgeon at the Western Ophthalmic Hospital, London.

Drs. Cassius D. Wescott and William H. Wilder have been made assistant professors in the Rush Medical College, Chicago.

At Breslau Dr. O. Meyer has been selected as chief of the great Silesian Ophthalmic Institution, in place of Dr. Landmann.

Dr. Frank Van Fleet has been promoted to a full professorship in the New York Post Graduate School and Hospital.

Mr. George Thompson, M. B. C. M., Edinburg, was recently appointed assistant surgeon at the Western Ophthalmic Hospital, London.

Mr. W. T. Holmes Spicer, M. A. M. B. Cantab., F. R. C. S. Eng., has been made surgeon at the Royal London Ophthalmic Hospital.

Prof. Kuhnt, of Königsberg, has been offered the chair of ophthalmology at the University of Wurzburg, as successor to the late Prof. Michel.

A fourth chair of ophthalmology in the Philadelphia Polyclinic and College has been created and Dr. James Thorington has been elected to fill it.

Mr. A. Hallidis, M. B., F. R. C. S., has received the appointment of ophthalmic surgeon to the Hastings, St. Leonard's and East Sussex Hospital.

Dr. Percy Fleming and Mr. Arnold Lawson, F. R. C. S. Eng., have received the appointment of Assistant Surgeon to the Royal London Ophthalmic Hospital.

Mr. Kenneth E. Campbell, M. B., F. R. C. S., late senior assistant surgeon, has received the appointment of surgeon at the Western Ophthalmic Hospital, London.

On February 1 the new Eye Clinic was inaugurated at Prague, a full description of which, with illustrations, is given by Professor Czermak in the Prager Med.-Wochenschr.

Dr. Edward Jackson, of Denver, at the last meeting of the American Medical Association, was appointed a member of the Committee of Prize Essays for the coming year.

Dr. S. O. Richey was recently elected President and Dr. Anton Coe Vice-President, Secretary and Treasurer, of the Washington, D. C., Ophthalmological and Otological Society.

The Heidelberg Ophthalmological Society has arranged its meeting this year to be held September 13, 14 and 15, so as not to interfere with the International Medical Congress at Paris.

In the second volume of "Progressive Medicine," for 1900, the chapter devoted to Ophthalmology, is very ably written by Dr. Edward Jackson, of Denver. The chapter includes eighty pages of exceedingly valuable material.

It is with pleasure that we announce that one of the members of our Editorial Staff, Dr. Charles A. Oliver, of Philadelphia, has recently been honored with a Corresponding Membership in the Société Centrale de Medicine du Department du Nord.

Mr. E. Treacher Collins, F. R. C. S. England, has recently been appointed surgeon to the Royal London Ophthalmic Hospital, and Mr. J. H. Fisher, M. B. London, and F. R. C. S. England, has been appointed assistant surgeon at the same institution.

We learn of the following changes made in the chair of ophthalmology in the Gross Medical College, Denver: Dr. Melville Black will conduct the didactic and Dr. David H. Coover the clinical work. Both have the same title, Professor of Ophthalmology. Dr.

Robt. LeMond has been made an Emeritus Professor of Ophthalmology.

Gerhardt calls attention to a discovery of König's, viz., that of blue blindness in granular kidney. A number of such cases have come under his own notice.—Philadelphia Med. Journal.

The New York Eye and Ear Hospital.—A two story addition to the New York Eye and Ear Hospital will soon be erected on the lot 311 East Thirteenth street, in the rear of the present buildings of that institution at the northeast corner of Second avenue and Thirteenth street.—New York Med. Record.

Professor J. Von Michel, of Würzburg, has been selected to succeed Professor C. Schweigger, in the chair of ophthalmology at the University of Berlin. Prof. Schweigger has held the chair since the death of A. von Graefe, in 1870. Prof. Schweigger will still continue his work as the Editor of the German edition of Knapp's Archives.

Ophthalmologists the world over will regret to know of the death of Dr. George Frothingham. He was by birth a Bostonian. He graduated from the medical department of the University of Michigan, 1864, where he was for sometime professor of ophthalmology. He was a skillful and painstaking ophthalmic surgeon and a genial pleasant gentleman.

At the annual meeting of the Missouri State Medical Association, held at Mexico, Mo., May 15, 16, 17 and 18. among the papers were "Report on the progress of ophthalmology," by Dr. J. H. Thompson, of Kansas City; "Intra-Ocular tumors with specimens," by Dr. C. Barck, of St. Louis, and "Total ciliacitomy," by Dr. M. F. Weyman, of St. Joseph. The discussion on these papers was opened by Dr. B. E. Fryer, of Kansas City, and followed by Dr. J. Moores Ball, of St. Louis.

There will be four subjects for general discussion in the Ophthalmic Section of the International Medical Congress at Paris, viz.: 1. The actual status of our knowledge on the mechanism of accommodation, introduced by Professor Hess (Marburg). 2. Reform in the designation of visual acuteness, introduced by Javal. 3. On glaucoma following cataract operations. Introduced by Wicherkiewicz (Warsaw). 4. The treatment before and after the operations of cataract. Introduced by Schiötz, (Archives of Ophthalmology.)

At the fifth annual meeting of Ophthalmologic and Oto-Laryngologic Association held in St. Louis, April 5-6-7, 1900, the following were elected officers for the current year. Dr. M. A. Goldstein, of St. Louis, President; Dr. H. V. Würdemann, First Vice-President; Dr. C. R. Holmes, of Cincinnati, Second Vice-President; Dr. F. C. Ewing, Third Vice President; Dr. W. L. Ballinger, of Chicago, Secretary: Dr. W. L. Dayton, of Lincoln, Nebraska, Treasurer. The next place of meening will be at Cincinnati, April, 1901.

The meeting of the American Medical Association in Atlantic City, June 5-8, was the largest, in point of attendance, of any previous meeting and one of the most successful scientifically. There were 250 members registered at the Section on Ophthalmology. The program for this Section was restricted to 40 papers, of which only four failed to put in an appearance. This is a very high average of attendance and bespeaks the importance attached to the securing of a position on the program of this body.

The importance of the work of this Section and particularly the value of a carefully selected and limited program was shown by the

Chairman. The address by Dr. Frank Allport. "What Amoun of Visual Defect Should Disqualify in Railroad and Steamship Service," and that by H. Hansell on "Estimation of the Amount of Injury to the Business Capacity of the Individual from Partial or Complete Loss of Vision" were particularly well received and exceptional notice given them. These members were extended a vote of thanks for their valuable papers. Other essays of great interest and value were those on "Treatment of Conical Cornea" by Swan M. Burnett, Washington and Robert Sattler, Cincinnati; on "Therapeutic Measures for Absorption of Exudates within the Eyeball" by M. Uribe Troncoso. Mexico City and Casey A. Wood, Chicago; "How to Construct Curves Representing Relative Accommodation and Convergence," Lucien Howe, Buffalo. Geo. E. de Schweinitz, Philadelphia, succeeded in making a most interesting and valuable contribution on the Treatment of Immature Cataract, its Rate of Development and Measures intended to Check it." A new and practical feature was a paper by A. D. McConachie of Baltimore on "Relative Value of Instruments Used for Keratometry, with Demonstrations of Different Ophthalmometers."

The officers elected for next year are: J. A. Lippincott of Pittsburg, Chairman; E. C. Ellett of Memphis, Secretary. Executive Committee: Harold Gifford of Omaha, Casey A. Wood of Chicago, H. V. Würdemann of Milwaukee.

The next meeting of the A. M. A., will be held in June at Minneapolis. Minn.

The following is a list of those who attended the meeting of the Section on Ophthalmology A. M. A., Atlantic City Meeting, June 5, 6, 7, 8, 1900.

H. O. Reik, G. A. Fleming, H. Friedenwald, R. L. Randolph, J. F. Herbert, A. D. McConachie, J. T. Carpenter Baltimore, Md.; G. E. de Schweinitz, Paul J, Sartain, Walter L. Pyle, Isaac Leopold, L. J. Lautenbach, Louis F. Love, Chas. Hermon Thomas, Charles A. Oliver, L. Webster Fox, J. Thornington, S. D. Risley, C. A. Veasey, E. A, Shumway, S. L. Ziegler, T. B. Schneidemann, J. Wm. Pancoast, Thos. H. Fenton, Geo. M. Gould, H. F. Hansell, Wendell Reber, C. S. Eldridge, Wm. M. Sweet, Wm. Thomson, Wm. C. Posey, G. Oram Ring, Philadelphia; J. E. Willits, J. A. Lippincott, Pittsburg; N. J. Hepburn, Herman Knapp, W. B. Marple, Peter A. Callan, Geo. H. Cooke, A. E. Davis, W. H. Seabrook, W. H. Bates, Aida Seaman Bates, J. E. Weeks, New York; Horace M. Starky, T. A. Woodruff, R. A. Marmion, Casey Wood, F. C. Hotz, H. Gradle, Frank Allport. William A. Mann, Chicago; C. C. Knapp, Zanesville, O.; William H. Dudley, Easton, Pa.; V. T. Churchman, Charleston, W. V.; Mark D. Stevenson, Akron; C. M. Culver Albany; C. F. Clark, Columbus; Ira J. Dunn, Erie; Frank C. Todd, Minneapolis; F. T. Rogers, Providence; W. Stanley Samson, Lancaster; F. E. Samson, Creston, Iowa; F. W. Frankhauser, Reading; O. F. Kistler, Wilkes-Barre; J. W. Chamberlin, St. Paul; M. Uribe Troncoso, City of Mexico; Robt. Sattler, Cincinnati; M. P. Davidson, Richmond; Lorenso Barrows, Jr., Buffalo; D. C. Lonchery, Salem, Charles M. Robertson, Davenport; James Moores Ball, St. Louis; G. A. Aschman, Wheeling; J. S. Kirkendall, Ithaca; Idak Gridley Case, Collinsville; Dudley S. Reynolds, Louisville; G. C. Savage, Nashville; W. F. Southard, San Francisco; W. H. Merrill, Lawrence, Mass.; Geo. D. Cross, Chester, Pa.; S. S. Bishop, Carlyle, Pa.; C. H. Brobst, Peoria, Ill.; Edward Jackson, Denver; J. V. Johnson, Sheboygan, Wis.; Lewis H. Taylor, Wilkes-Barre; E. E. Holt, Portland Maine; John Chase, Denver; A. R. Craig, Columbia, Pa.; C. H. Richards, Dunkirk, N. Y.; J. A. White, Richmond; E. J. Lewis, Sauk Center, Minn.; F. W. Higgins, Cortland, N. Y-; J. B. Wainright, Manasquan, N. J.; W. L. Dayton, Lincoln, Neb-;

F. A. Powell. Sioux City. Iowa; Chas. H. Williams, Boston, Mass.; Jno. F. Fulton, St. Paul; Albert E. Bulson, Jr., Fort Waine; F. C. Ard, Plainfield, N. J.; H. D. W. Carvelle, Manchester, N. H.; Berrick T. Vail, Cincinnati; A. R. Baker, Cleveland; W. M. Pollard, Atlantic City; A. Lawton Hiers, Savannah, Ga.; A. E. Smith, Olean, N. Y.; W. B. Johnson, Paterson, N. J.; O. E. Eidember, Waterbury; C. S. Rodman, Waterbury; J. L. Siebert, Bellefonte, Penn.; A. W. Calhoun, Atlanta; H. V. Würdemann, Milwaukee; Swan M. Burnett, Washington, D. C.; W. K. Butler, Washington, D. C.; P. J. Kress, Allentown, Pa.; H. B. Baker, Gamiton; C. F. Allen, Aurora, Ill.; Elizabeth P. Rindlanb, Fargo, N. Dak.; J. B. Pillok, Hamburg, N. J.; Ulyssus H. Brown, Syracuse; R. W. Gillman. Detroit; J. G. Grant. Akron, O.; O. L. Bartlett, Brocton, Mass.; J. A. Ellgood, Wilmington; John L. Dickey, Wheeling, W. V.; David Dennis, Erie, Pa.; Miles Standish, Boston, Mass.; H. B. Young, Burlington, Ia.; T. Y. Sutphen, Newark, N. J.; J. M. Ray, Louisville, Ky.; A. C. Beetham, Bellaire, O. E. C. Ellett, Memphis, Tenn.; A. N. Alling, New Haven, Ct.; R. S. Magee, Topeka, Kan.; W. C. Abaly, Madison, Wis.; Geo. L. Cassell, Lancaster, Pa.; G. A. Sulzer, Portsmouth, O.; S. B. Muncaster, Washington; F. K. Smith, Warren, O.; W. K. Rogers, Columbus; S. C. Ayres, Cincinnati; C. R. Ellwood, Menominee, Mich.; J. L. Thomson, Indianapolis, Ind.; Leartus Connor, Detroit, Mich.; C. L. Frey, Scranton, Pa.; H. B. Baker, Gameton; O. L. Bartlett, Brockton, Mass.; M. Griffith, Washington, D. C.; Alvin A. Hubbell, Lucien Howe, Buffalo, N. Y.

We give the following a place for the reason that dormiol would seem to be safe and reliable hypnotic for use after cataract extraction, at which time sleep is so important:

Dormiol.—Peters has used dormiol for the past nine months in various conditions. It consists of one molecule of chloral, combined with one molecule of amyleuchydrate, and is an oily, colorless fluid, of a specific gravity of 1.24, a camphor odor, and a cooling taste. It has been used in organic and functional nervous diseases, and in other affections in which insomnia is a prominent symptom. It is given in ten-per-cent. watery solution or in gelatin capsules. It is agreeable to the taste, and no bad effects are noted on the heart, kidney, bladder, etc. In eighty-four per cent. of the cases a deep sleep was produced. It is especially useful in functional neuroses. The initial dose is gr. viiss., increasing to gr. xv.—(Münchener medicinische Wochenschrift, April 3, 1900.) Phila. Med. Journal.

Mr. McHardy, ophthalmic surgeon to King's College Hospital and the Royal Eye Hospital (Southwark), has made a forcible complaint of what he terms the unreasonable demands of the London School Board upon the ophthalmic service of the London hospitals. No doubt there is much in what he says. But the public will expect the hospitals to try to cope with the difficulty as far as possible, because the neglect of the eyesight of the young is little less than a national misfortune. Short sight is a common defect in English children and if neglected the evil becomes permanent and serious. Easily made worse by injudicious methods of education, short sight debars the lad from entering the army, navy, police force, or railway service. It is therefore an evil of a far-reaching sort and the School Boards must do their best to meet it. Mr. McHardy holds that the Boards should be prepared to provide a medical officer capable of inspecting, and if necessary of treating, the eyesight of the pupils. If this plan were adopted the school-rates of London, already enormously high, would be increased considerably, a fact which will probably prevent any innovation upon such a line.—Phila. Med. Journal.

In the December number of the Scottish Medical and Surgical Journal Dr. George Mackey and Dr. J. C. Dunlap, of Edinburgh, publish a full description of the cerebral lesions observed in an instance of complete acquired color-blindness, achromatic vision being at the same time retained. They believe this to be the first complete case of the kind that has been submitted to post mortem examination. The patient was sixty-two years old. Good mind and color sense. In 1896 became anemic. Vision became affected November 24, 1897. Could not read his mail nor distinguish vivid colors. Dunlap examined him December 23, and found complete color-blindness. Form vision good. January 26, 1898, form vision still good. Discs senile and anemic, but not atrophied. Color vision as before. April 17, right-sided hemiplegia. April 22, died.

Post Mortem.—Atrophy of posterior part of temporo-occipital convolution, on both sides, extending on left side to floor of lateral ventricle, and gray substance of calcarine fissure. On both sides lower edge of optic radiation affected. The nature of atrophy was due to hyaline degeneration of adventitia of vessels, which had to great extent cut off blood supply, and had led to complete destruction of the proper nerve elements, both fibers and cells, of the affected portions of the brain. Mackey and Dunlap believe that the total loss of color sense being associated with a bilateral lesion of the fusiform convolution, so well defined and symmetrical, it becomes difficult to avoid the conclusion that the gray matter of that convolution is probably concerned in the perception of colors. Verrey, in the Archives d'Ophthalmologie XVII, 1888, p. 289. has recorded a comparable case of acquired one-sided color-blindness, examined post mortem.—Ophthalmic Record,

Many Blind Russians.—Statistics which have just been compiled show that of the 302,000 totally blind persons in Europe, 192,000 are natives of Russia, and this means that out of every 500 subjects of the czar there is one who is deprived of sight. In no other country do we find this terrible affliction by any means so widespread. In Germany, France, Great Britain, Italy and Spain there is only one blind person in every 1,000 inhabitants Russian oculists and physicians say that the reason why so many of their countrymen are blind and so many others have defective eyesight is because insufficient attention is paid throughout the country to the ordinary laws of hygiene, and they maintain that Russians will continue to suffer in this way as long as they keep themselves and their homes in unhealthy condition.—Ophthalmic Record.

Weltmerism in Pennsylvania.—The following correspondence is self-explanatory:

H—TOWN, BUCKS CO., PA., April 24, 1900.

To the Secretary of State, Harrisburg, Pa.

DEAR SIR:—Enclosed you will find Prof. S. A. Weltmer's ad. concerning magnetic healing. I have completed the full course as outlined in the circular I send you (please return circular), and can truthfully say his methods are all right in the healing line because I have tested them to my own satisfaction. The healing power is wonderful. At the Weltmer Institute have been treated by the absent method 53,000 people and out of this enormous number only 12 have not been cured.

My object in writing you this letter is to know the law regarding these treatments in the State of Pennsylvania. I desire you to answer this and let me know as I wish to have authority in this matter from headquarters before I proceed to full practice. I desire to practice if the law will permit. No medicine is used at all. The treatments are mostly employed in chronic cases; and in serious cases in conjunction only with a regular drug physician. I judge the law does not interfere since no drugs are used and also because

I notice advertisements in papers of students from the Weltmer Institute who are practicing in Pa., and who are not regular drug physicians. My regular occupation is public school teaching.

Enclosed find 4-c. postage for reply. I thank you heartily in advance for the information if this is sufficient.

## MEDICAL COUNCIL OF PENNSYLVANIA.

OFFICE IN THE DEPARTMENT OF INTERNAL AFFAIRS, HARRISBURG, MAY 1, 1900.

DEAR SIR:—Your communication to the Secretary of the Commonwealth concerning the practice of the so-called science of magnetic healing, has been referred to me as Secretary of the Medical Council for reply.

The Medical and Dental Councils (I notice that dentistry is also included as a part of Mr. Weltmer's teachings) have certain well-defined duties under the law which created them. To counsel or advise those who may seek to treat disease other than by the methods recognized by the laws of Pennsylvania is not among these defined duties. I might incidentally mention, however, that both the Councils are clearly of the opinion that the acts which created them, together with the Fourth Section of the Act of 1877, amended in 1897 (Pamphlet Laws, page 257), providing for a special per diem ten-dollar license for those who seek to cure the sick or afflicted by itinerating from house to house or by the use of any medicine. means or agency whatever, prohibit the practice of medicine or any healing art, except as provided by the law.

Very truly yours,
JAMES W. LATTA, Secretary.
—Philadelphia Med. Journal.

P. Blakiston's Son & Co. will publish the following important work, which is edited by our colleague Dr. Oliver:

Ohlemann. Ocular Therapeutics.—A systematic Handbook. By F. W. Max Ohlemann, M. D., late Assistant Physician in the Ophthalmological Clinical Institute, Royal Prussian University of Berlin. Translated and Edited, with permission of the author, by Charles A. Oliver, A. M., M. D. (Univ. Pa.), one of the Attending Surgeons to the Wills Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital. 12mo. Just ready. Cloth, net, $1.75.

No attempt has been made for many years to treat exhaustively the remedial agents used in ophthalmology. The aim of this book is to supply a treatise on this subject that will serve as a guide to the practicing physician; and in no branch of therapeutics is the relative value of the remedies and formulae to be employed so worthy of careful consideration, and their results, when intelligently employed, of so much importance to the physician and patient. Dr. Oliver has not only translated this book, but has taken great care throughout to edit it so that it represents the best and the latest methods of practice. The work contains 226 formulæ, the proportions being stated in both metric and apothecaries' systems of weights and measures; and, besides a full list of contents, has an index of authors, an index of drugs, and an index of diseases, thus rendering it useful for quick and exact reference.

General Part.—I. Mechanical Treatment II. Thermic Agents. III. Chemic Agents. IV. Electricity. V. General Treatment.

Special Part.—VI. Treatment of Diseases of the Lids. VII. Treatment of Diseases of the Lachrymal Passages. VIII. Treatment of Diseases of the Conjunctiva. IX. Treatment of Diseases of the Cornea. X. Treatment of Diseases of the Sclera. XI. Treatment of Diseases of the Iris. XII. Treatment of Diseases of the

Ciliary Body and the Vitreous Humor. XIII. Treatment of Diseases of the Choroid. XIV. Treatment of Diseases of the Retina. XV. Treatment of Diseases of the Optic Nerve. XVI. Treatment of Amblyopia and Amaurosis. XVII. Treatment of Diseases of the Muscles and Nerves.

Optic Neuritis as a Complication of Diseases of the Nervous System. —Schluster and Mendel (Neurologisches Centralblatt, November 15, 1899) report a case of locomotor ataxia in the course of which bilateral optic neuritis occurred. They also reported two cases of multiple neuritis in which the same symptoms was present. In the second there were symptoms of involvement of the other cranial nerves, leading to the suspicion that, perhaps, a basilar meningitis coexisted. The patient, however, recovered.

Glioma of the Retina —Y. V. Zelemkovski reports a case of this affection in which he made a very careful histological study of the lesion, as a result of which he formulates the following conclusions:

1. The cylindrical arrangement of a glioma is not fortuitous, but is very probably dependent upon the spherical shape of the retina and pressure exerted by the original cellnests both upon the normal parts of the retina and one upon another:

2. Glioma of the retina may develop simultaneously from four layers—that of the nerve fibers, the ganglionic, the internal and the external granular.

3. The retinal glioma consists of spider-cells, with many offshoots, identical with the cells of the neuroglia and the spider-cells of the retina and optic nerves, and of ganglion-cells of various sizes, in the midst of which are others resembling embryonal retinal-cells.

4. The possibility of glioma originating from the layers in which spider-cells are ordinarily not encountered, and the presence of these embryonal nerve-cells render very probable the view of Greeff that a glioma of the retina is developed from neuroglic and ganglionic elements which may remain for a certain time quiescent in any layer of the retina and then take on growth when favorable conditions arise.—Amer. Journal of Ophth.

Cause of Cancer.—Roswell Park (Buffalo Medical Journal, March, 1900) in discussing the cause of cancer, gives it as his personal opinion that cancer is of parasitic origin. Not one parasite, but probably many, are responsible for the various malignant growths. In their labors at the State Laboratory in Buffalo, they have received increasing confirmation of this belief. They have found in all carcinomata certain bodies resembling fat, but which are not soluble in ether nor alcohol. These are the bodies described by H. G. Plimmer in the April number of the London Practitioner, 1899. Park says that in their recent work, in which cancer-tumors are introduced into living animals, they were able to find these bodies in large numbers in the enlarged lymph nodes of the animals. They have been able in one case to produce a true adenocarcinoma in an animal by inoculation with fluid from the peritoneal cavity of a man suffering from colloid cancer of the omentum. In this fluid was found an organism which apparently belongs to the yeast group, but which they were unable to cultivate. The laboratory is in possession of pathogenic yeasts which various investigators have isolated from cancer, and experiments are being performed with them. These organisms are exceedingly polymorphic and difficult to deal with. [M. B. T.]—Philadelphia Med. Journal.

Ophthalmic Section International Medical Congress.—The officers of the Section on Ophthalmology of the XIII International Medical Congress, to be held in Paris, August 2 to 9, 1900, are (we learn through a circular recently issued through the secretary): President, Panas, Paris; vice-president, Javal, Paris, and Gayet, Lyons. The secretary is Dr. Parent, Avenue de l'Opera 26. Paris, and the assistants are Chevallereau, Paris, and Rochon, Duvigneaud, Paris. The principal subjects, in the form of reports, for general discussion are: (1) Optic Neuritis of Infective and Toxic Origin, introduced by Nuel, Liege, and Uthoff, Breslau. (2) The Cortical Centre for Vision, introduced by Brenheimer, Vienna, Angelucci, Palermo, and Henschen, Upsala. (3) The comparative Value of Enucleation and its Substitutes, introduced by Snellen, Utrecht, Swanzy, Dublin, de Schweinitz, Philadelphia, and Pflueger, Berne. (4) The Present State of Our Knowledge of the Mechanism of Accommodation, introduced by Hess Marburg. (5) Reforms in the Methods of Noting the Visual Acuity, by Javal, Paris. (6) Glaucoma Following Cataract Extraction, B. Wicherkiewicz, Cracow. (7) The Preliminary and Post-Operative Treatment of Cataract, by Schiötz, Christiania. These reports will be printed in French and distributed in advance to those members who have registered before the meeting. A résumé only of each will be read at the sectional sessions, after which a discussion of the whole paper will be in order. Members desiring to participate in these discussions are requested, after reading the reports, to prepare their discussions in advance, so that they may be published as soon as possible. Any paper touching the subjects of these reports will be considered as forming part of the discussion and so treated. A member intending to contribute a paper on any other subject will send the secretary, at the earliest possible date, the title of his communication. If the entire paper be sent before the first of July, it will be placed first on the list. With it should be mailed a short abstract in at least two languages, German and French or English and French. Keeping in mind the probable large number of papers, contributors are expected to be as brief as possible.

The secretaries of the Section, who are conversant with French, German and English, will give an exact account of the sessions. This résumé will be printed during the night and published the following morning in the "Journal of the Congress." The meetings will be held in the Hotel Dieu, Place Parvis, Notre Dame. Here will be found rooms reserved for views, microscopical demonstrations and for a display of instruments. Intending members will send a visiting card to the Secretary of their National Committee, enclosing the subscription, (America, Dr. Henry B. Jacobs, E. W. Franklin street, Baltimore, Md., five dollars), who will return a card of admission—(Opthalmic Record.)

According to the "The Keystone," the organ of the jewelry and optical trades, the opticians are "organizing," all over the country a number of abstracts from these society reports are here given:—

The annual meeting of the Iowa Optical Society was held in the Savery Club Room, on June 20th and 21st. The attendance was very satisfactory, sixty members being present at the opening session, and more arriving later. The work of the first day's session consisted largely of practical demonstrations of optical instruments.

In the course of his address, entitled "Points for the Opticist," Secretary J. C. Clark, of Sioux City, said: to-day the opticist is getting in the way of some who think they are the only ones entitled to bread and meat.

Section 2581 of the statute relating to the practice of medicine in the State of Iowa, declares an itinerant physician to be a physician practicing medicine, surgery or obstetrics, or professing or attempting to treat, cure or heal disease, ailments or injuries by any medicine, appliance or method.

Through the phrase "appliance or method" they intend to reach the "opticists." I have a letter from the secretary of the State Board of Medical Examiners, in which he states I am clearly violating this law, and subject to fine and imprisonment, because I advertise to furnish glasses that relieve headache. and under the same construction, if I furnish a person a cork leg, a crutch, a cane or an invalid's chair, which are all appliances for relief of ailments, I would be violating the law.

In regard to the present law, I do not think they could convict, as it was clearly the intent and purpose of the law to apply to the medical profession, and they could not twist it around to mean differently than originally intended; but that they may attempt it is probable from the letter written me, and shows their disposition to do so.—The Keystone.

The annual meeting of the New York State Optical Society was held at the Fifth Avenue Hotel on the evenings of June 26th and 27th. The attendance was disappointing.—The Keystone.

Prof. Charles Barnard has been secured to deliver a lecture on "Light," at the forthcoming meeting of the American Association of Opticians, to be held in Detroit, August 14th, 15th and 16th.—The Keystone.

A meeting of the Wisconsin Optical Society was held in the club room of the Plankinton House, Milwaukee, on July 20th. —The Keystone.

A meeting of Minnesota opticians was held at the West Hotel, Minneapolis, May 29th, for the purpose of organizing a State association, about thirty opticians being in attendance,—The Keystone.

The adjourned meeting of the Granite State Optical Association was held at Brown & Burpee's parlors, Manchester, N. H., on the evening of June 5th. It was a well-attended and enthusiastic meeting, the presence of out-of-town members being particularly noticeable.

It was voted to co-operate in the defence fund movement started by the New England Association of Opticians, by paying each year an amount from the treasury equal to one dollar for each member until said fund had reached the amount of $500, A resolution was passed as follows:

That opticians should have a building at the Pan-American Exposition in Buffalo next year which is adapted to the exhibition of everything in the optical line and to the promotion of education. First, education of the public as to the proficiency of up-to-date opticians as refractionists, and second, education of the profession by lectures and discussions held twice, or more, a week after the manner of a summer school or institute.—"The Keystone."

The regular monthly meeting of the New York City Optical Society was held at the Fifth Avenue Hotel on the evening of June 13th. Prof, Fox opened the scientific part of the meeting and gave an hour's talk on "Achromatic Lenses." Concluding, he wished the members pleasant vacations and when they came together at the fall sessions he optimistically hoped all disputes between oculists and opticians would be at an end. He was followed by L. L. Ferguson, who described a new instrument for making skiascopic axaminations.—"The Keystone,"

A number of opticians met on May 23d in the Chamber of Commerce at Charlotte, N. C., and organized a State optical society for the education of its members, protection to guard against adverse legislation and the suppression of fakirs.

The regular monthly meeting of the executive committee of the

Pennsylvania Optical Society was held at 128 South Eleventh Street, Philadelphia, on Tuesday, June 12, 1900.

Arrangements have been made to hold the annual meeting on Tuesday, September 18th, and President Martin reported that one of the leading oculists of Philadelphia had consented to deliver a lecture on the "Appearance of the Fundus of the Eye in Different Diseases," illustrated by lantern slides specially prepared for this lecture. The lecture will be delivered at two o'clock on the afternoon of the annual meeting, and to this lecture every member of the association will have the privilege of inviting one friend,

The last meeting of the New England Association of Opticians, before the summer adjournment, was held at the association rooms on the evening of June 19, with an attendance larger than usual. Mr. A. Jay Cross was then presented to speak on "Practical Optometry." He explained that he had just returned from a tour of thirteen Middle Western States, and he referred to the satisfactory condition in general in which he had found opticians in the states visited.

Optical Palace at the Paris Exposition.—The "Palais de l'Optique" at the Paris Exposition contains every famous discovery within recent years in the science that treats of light and vision. The great attraction, of course, is the wonderful telescope—already described in The Keystone. The palace is composed of a number of rooms; the public is conducted from one to the other, and in each there is an official who gives the necessary explanations of the wonders we behold.

We are shown into a darkened room, where upon a kind of stage we see luminous draperies floating gracefully in mid-air. And it is only when the light is turned on that we discover that a woman has been dancing whose draperies have been impregnated with a chemical substance that renders the material phosphorescent, thus causing a strange optical illusion. The principle that each sound has its corresponding color due to a known number of vibrations, is illustrated here by an organ on which a melody is played which causes the electric lights of different colors around the room to become incandescent each time certain notes are struck. Thus we have flashes of green, blue, white, red and yellow, and sometimes three and four together, in the case of full chords.—The Keystone.

The Perception of the Blind.—In the Doctor's Magazine for July is an article by Frederick Boyd Stevenson giving an account of certain inmates of the Illinois Industrial Home for the Blind, who, though totally blind, possessed the faculty of recognizing objects, to a certain extent, without the apparent aid of the other senses. Thus, one could tell when he was approaching a tree or a curbstone and could even recognize the different individuals in the room. But if he was expecting to meet persons he could not tell whether any one was in the room or not. Similarly, if the electric light was turned on unexpectedly he was aware of it, but if it was announced beforehand he could not recognize the difference. Attention or expectation seemed to destroy the peculiar perceptive faculty possessed by the individual, which seems, therefore, to depend somewhat on the untrammeled exercise of all the powers of unconscious sentience or of some special as yet unrecognized faculty called into action by the deprivation of sight. This last is what is most readily assumed, but whether correctly is a question. Stevenson adopts this view and quotes some reported facts of somnambulism as being at least suggestively explanatory. Just how perceptions reach the conscious centers is not always clear and there may be possibilities as yet unthought of. The case of the perception of light through the nose reported a year or two ago is in point. It hardly seems necessary, however, to admit more perhaps than a sharpening of the unconscious sensory cerebration which we utilize in every movement and function, but which in the full use of our senses may not be called into action. This may not be an adequate explanation, but it suggests itself as being as reasonable as any. The perceptions of the blind are a subject not yet fully exhausted by the psychologists.—Jour. Amer. Med Assoc.

Dr. H. V. Würdemann has been made ophthalmic and aural surgeon to the Trinity Hospital and the Eye and Ear Clinic, and has taken the Chair of Ophthalmology to the Milwaukee Medical College.

Dr. Nelson M. Black has been appointed one of the attending eye and ear surgeons to the Trinity Hospital, to the Clinic and lecturer on Ophthalmology and Otology to the Milwaukee Medical College.

# BOOK NOTICES.

### Heterophorias and Insufficiencies, a Clinical Study.

SEABROOK, H. H., New York. (Surgeon New York Eye and Ear Infirmary, etc. 8 vo. The Knickerbocker Press, 1900. Price $1.00)

At last a rational explanation, couched in plain language, of the relation between ocular muscle imbalance, asthenopia and ocular reflexes has arrived. It is true that other authors have given us some credible work, but many of the germs of truth regarding the physiology of the ocular movements, their pathology and treatment that have been evolved in the brains of some earnest investigators, have been mishandled in their borning, and like the endeavor to bud a pear shoot upon a peach stock, have flourished for a while but soon withered without the bearing of fruit. Even now much of our treatment for muscular insufficiency is empiric, the diagnosis depending upon unproven points in physiology and optics. I believe that Seabrook voices the present opinions of most advanced ophthalmologists as regards the effect of ocular muscle disturbances upon the function of vision. He occupies a middle ground and places the subject of ocular reflexes much more in the back than has been done by the "ocular-muscle-reflex-symptom-extremist." a specimen of which I served up in a review for the April ANNALS.

This author is a safe guide for the average ophthalmic practitioner. The book is itself a review and must be read to appreciate the author's common sense standpoint; while he is not on the least radical, still he casts down some brazen idols.

"Teaching a patient to converge with prisms is simply training for a test, and has something of the same relation to a cure of weak convergence as training a sensitive throat for the tongue depresser has to the treatment of hypertrophied tonsils." (p. 15.)

"In cases in which these symptoms are especially dwelt upon as diagnostic of the general nervous condition they are frequently helped by treatment of eye strain. I have myself sometimes in this manner received credit for curing neurasthenia through the eyes, although as far as I know I have never seen a case in which I could positively and justly claim any such cure. The same holds good in other conditions, the so-called gouty headache and that of nephritis, may not uncommonly be relieved through eye treatment, because it was a symptom of an eye condition, not of gout or kidney trouble; yet it would be absurd to claim that the general disease had yielded to cylinders, prisms, or operations upon the eye muscles." (p. 23.)

"The general rule of double causation must be applied in these cases: there are cases of eye deviations of the same character as those which cause trouble, which with just as hard use of the eyes cause no asthenopic symptoms whatever; hence these symptoms must be referred, when they occur from eye errors, to such errors working upon some general condition susceptible to such symptoms." (p. 24.)

The author does not fully correct the most ametropic eye in cases of anisometropia. "Almost invariably the patient in such cases suppresses the image of one eye, or at least does not have binocular vision. The only cases in which such a correction is really indicated occur among patients with no tendency to asthenopia where it is desirable to better the field on the side of the defective eye." (p. 30.)

He calls attention to other cases of asthenopia than those commonly considered, which are the retinal, accommodative and muscular, and shows that insufficient or too intense illumination produces exhaustion of the retina or a direct chemical effect. (p. 105.)

His concluding paragraph well describes his ideas for the treatment of asthenopia. "This book is not intended for those who can treat asthenopia successfully by ignoring the ocular muscles, or those who can obtain the same happy results through these muscles alone." (p. 106.)

This little book should be carefully read by all who wish to keep themselves from either dropping into the rut of ignoring muscular defects or of acquiring that peculiar phase of paranoia which has resulted in the modern "muscle snipper."

H. V. WÜRDEMANN.

### The Pathologic Anatomy of the Optic Nerve Entrance.

ELSCHNIG, DR. ANTON, Privatdocent in Wien (Pathologische Anatomie des Sehnerveneintrittes. Augenärztliche Unterrichtstafeln, für den akademischen und Selbst-Unterricht. Herausgegeben von Prof. Dr. H. Magnus. Heft XIX; 12 Tafeln mit Text; Breslau, 1900; J. U. Kern's Verlag. Price 8 M. $2.00.)

It is always with pleasure that I chronicle the advent of a new member of Magnus' Ophthalmic Lecture Charts. Elschnig's work in No. XIX, is fully on a par and is a companion to a previous number by him on the Normal Anatomy of the Optic Nerve Entrance. This number contains 12 very finely executed microphotographs magnified 25 D, by Dr. O. Zoth, and is accompanied by 16 pages of text describing briefly the clinical history and pathologic anatomy of the following cases: I. Atrophia nervi optici (Tabes dorsualis). II. Atrophia nervi optici partialis (Sclerosis disseminata). III. Neuritis optici (beginning choked disc) in beginning tubercular meningitis. IV. Neuritis optici (choked disc) in cerebral tumor. V. Neuritis optici (choked disc) in chronic hydrocephalus. VI. Neuritis optici (choked disc) in cerebral tumor. VII. Neuritis optici (choked disc) in cerebral tumor. VIII. Secondary glaucoma after thrombosis of the vena centralis nervi optici. IX. Glaucoma absolutum. X. Secondary glaucoma after corneal staphyloma (Ophthalmia neonatorum). XI. Glaucoma absolutum (Hernia of the vitreous in the optic nerve). XII. Amotio retinae, atrophia nervi optici (Phthisis bulbi).

This number is particularly instructive to the clinician and is of much value for illustrative lecture purposes.

H. V. WÜRDEMANN.

### The Anatomy of the Eye with Reference to Its Historic Development.

MAGNUS, PROF. DR. H., Prof. der Augenheilkunde, Breslau. (Die Anatomie des Auges in ihrer geschichtlichen Entwickelung. Augenärztliche Unterrichtstafeln für den akademischen und Selbst-Unterricht. Herausgegeben von Prof. Dr. H. Mangus. Heft XX; 13 farbige Tafeln mit Text; Breslau, 1900. J. U. Kern's Verlag. Price 8 M. $2.00.)

This one is a series of 13 plates accompanied by 28 pages of text. The two show the various stages of the development of ophthalmo-anatomic knowledge from ancient to modern times and illustrate the conception of the eye possessed by the teachers, Demokritus 470 B. C.), Hippocrates and Aristotle (300 B. C.), Celsus (100 B. C.), Rufus (100 A. D.). Galen (200 A. D.), Alhazen (1038 A. D.), Maurolykus 1494-1577 A. D.), Vesalius (1514-1565 A. D.), Porta

(1538-1615 A. D.), Scheiner (1517-1600 A. D.), Molinetti (1700 A. D.), Sömmering (1755-1830), and the schematic eye of Flemming of Kiel, at the end of the nineteenth century, which is our present conception. The text and plates are of considerable historical interest.

H. V. WÜRDEMANN.

### The Refraction of the Eye. A Manual for Students.

HARTRIDGE. GUSTAVUS, F. R. C. S., Senior Surgeon to the Royal Westminister Ophthalmic Hospital, London, 10th Edition, 1900. (Illustrated. 12 mo. P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia, Pa., Price $1.50.)

Very few medical books become classic, but there seem to be some having such intrinsic merit that new editions are continually demanded until no library can be called complete without one or more copies of it. Such a book is Hartridge on Refraction. It has already reached its tenth edition since it first appeared in January, 1884. Certainly it is a safe and sure guide for any student, even outside of the specialty of ophthalmology, who wishes to acquaint himself with the principles of refraction and the methods by which errors are to be corrected. The book, of course, was originally an English work but its use seems to have spread all over the English speaking world and from this tenth edition before me I can well understand the reason for its popularity.

There are 12 chapters. The first deals with simple optics; the second with the various phases of refraction in the human eye. Then follow the methods of determining refraction, ophthalmoscopy, retinoscopy, hypermetropia, aphakia, myopia, astigmatism and anisometropia, presbyopia, strabismus, asthenopia, while the last chapter includes such general problems as spectacles, regulations for Army and Navy, examinations, testypes, etc.

The book is well printed and attractive and the style is direct. It can not be expected that this edition would have much new matter over the old and yet nothing has been omitted that can bring the book up to date. The author lays stress on several points which the average student or even practitioner is apt to overlook, for instance, the pin hole test (p. 54) is nicely explained, although this test—in this country at least—seems to be given rather to the quacks than to be practiced by the regular physician.

I am glad to notice the emphasis he lays upon the detection of the character of a refraction by the movement of the retinal vessels (p. 71). It is a test I always use myself and think that in America it is somewhat neglected. There is, to me at least, a new test mentioned (p 80) which deals with the effects of the rays of light as they are visible or not when the observers eye is removed from behind the mirror.

The author quotes extensively from Jackson (of Denver) giving due credit, and it is a pleasure to find American ophthalmology so honestly recognized.

The book is up to date, progressive, exhaustive and yet conservative. Its time honored place is made all the more secure by this latest edition.

A. B. HALE.

### A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery.

DEAVER, JOHN B., M. D. (Volume II. Royal Octavo. 709 pages, 169 full-page plates. Philadelphia. P. Blakiston's Son & Co.

The second volume of Deaver's Surgical Anatomy is before me. I have already reviewed in the ANNALS OF OPHTHALMOLOGY (April, 1900) the first volume, and need here only repeat what there has been said about the letter-press, the beauty of the plates—in fact, the perfection that characterizes the work as a product of artistic and mechanical skill. The second volume well fulfils the promise given by the first.

The present book deals with the neck, mouth, pharynx, palate, larynx, nose, sinuses, orbit, lacrymal apparatus, eyeball, ear, brain (all within the cranial cavity), joints of the head and neck (including fractures and dislocations), perineum and genital organs of the male, female perineum. Leaving aside the paragraphs and plates dealing with the male and the female perineums, which are by no means to be ignored, but which attract the attention more particularly of those surgeons interested in that region, we find that nearly the whole of the book offers matter of direct and vital importance to all readers of the ANNALS (both of Ophthalmology and Otology), and there is hardly a page which should not be known, or at least familiar, to those engaged in special work on the eye or ear.

In all there are 169 plates, only the last 25 of which relate to the perineum. Of the 677 pages (excluding the index), 584 are concerned with the head and neck. (It must be added that each plate occupies two pages.)

It is not to be expected that a review shall attempt an analysis of the method or purpose of the author; the most that can be done is to offer praise or blame as it seems to present itself to the reader, and I have, therefore selected rather at random and not necessarily in order numerous points of merit or demerit as they caught my eye. For instance, plate CCLXXX and CCLXXXI—diagrams of the ventricles of the brain—are remarkable for the clearness of the drawing and for the novel idea they give of the relationship between these cranial cavities. Plate CCLXXVIII, a picture (vertical incision) of the intraorbital contents, was attractive to me for its sharp outline of Tenon's capsule and the check ligament of the inferior rectus muscle, while the adjoining plate (horizontal incision) amplifies it by illustrating Tenon's capsule and space, the check ligaments and the relationships of the tear sac. In fact, the author seems to have been particularly eager to elucidate the puzzling anatomical problems at which the student and beginning specialist often stumble. Page 324 is largely devoted to the name of Tenon. The sphenoid fissure and cavernous sinuses are pictured in plate CCXXXIII; plate CCXXXV is all Lacrymal Apparatus, and from page 351 to page 357 is given a description of this and other plates, with the clearest statements about the gland, sac and duct, that I ever read. This, too. is the only anatomy I ever read which gives graphically the definitions of emmetropia, myopia and hypermetropia, while such classic terms as onyx, hypopyon, synechia and staphyloma cornea are considered in their anatomical bearing and discussed with reference to the surgical interference necessary to overcome them.

The organs of hearing cover from page 398 (plate CCXLIX) to page 444 (including plate CCLX). The attic, mastoid antrum, the ossicles, the membrana (in several plates) are given in fullest detail, while the diseases of the mastoid and its dangerous environment are carefully and clearly described. I do not know whether one may ask that the various eponymic operations be considered, and yet even the general surgeon may feel disappointed thus in such an exhaustive work there seems not quite enough space devoted to the mastoid and its surroundings; certainly a plate, or at least a modification of plate CXX (Vol. 1), with description of Stacke's or Schwartze's attack on the mastoid spaces, would not be out of place.

A reader or reviewer feels it his duty to find some fault; I have great difficulty in satisfying my conscience in this regard; but I would like to attack a few points to balance the praise so deservedly rendered. For instance, on page 352 the description of the lids embraces too much; a simple subdivision of tissues is easier for the surgeon. The operation of evisceration is not necessarily concluded by the introduction of a glass ball—in fact, such a method has but recently received its introduction to good surgical society and is a question apart from surgical anatomy. I fail to find any mention of the procedure adopted for the excision of the superior ganglion of the cervical sympathetic, and as this is becoming a popular operation both glaucoma and exophthalmos, it demands recognition. Plate CLXXXII says Axillary of Brachial Plexus—instead of *or*. The paper title Lacrymal Apparatus extends from p. 351 to 396, an obvious error, because, "The Eyeballs" begins at p. 357 and its consideration runs from there on.

Such a comprehensive system of Surgical Anatomy may not please every one, or be found perfect to every student, but it is not for this purpose alone that books are written. Certainly Deaver comes as close to perfection as human forethought can devise, and with the surgical knife trained with this treatise as an aid, wtih the eye full of the beauty of the plates, the memory stored with the precision of the text, and all guided by brains, there will be little else needed to make a success of any operation, if success is within human possibility. A. B. HALE.

### Atlas of Topographic Anatomy.

ZUCKERKANDL, E., PROF., Vienna. (Part I: Head and neck, in 219 colored pictures with explanations. 220 pages. Vienna and Leipzig, W. Braumüller, 1900. Price 12 Mark. $3.00.)

The author, whose excellent work on normal and pathologic anatomy of the nose and its pneumatic appendices will be familiar to every aurist and rhinologist, has just published this beautifully gotten up atlas. The plates are magnificent and the employment of different colors for muscles, arteries and veins render them especially clear. Not only the surgeon and general practitioner, but particularly the specialist for diseases of the eye, ear, nose and throat will find competent and very useful information in this first part, which shows views of regions of the head and neck the author uses for demonstration in his lectures with special regard to practical purposes. The drawings are original and present aspects of these parts which will not be found elsewhere. We strongly recommend this splendid moderate priced work, which ought to be in the hands of every one who performs operations on the head and neck. C. ZIMMERMANN.

### New Observations on the Anatomy of the Optic Chiasma.

KOELLIKER, A., PROF., Würzburg. Reprint from the Jubilee Number of the Transactions of the Physico-Medical Society of Würzburg with 16 original drawings. Würzburg, 1899, A. Stuber (C. Kabitzsch). Price 1.50 Mark, 35 cents.

After a short review of the recent observations of Bernheimer (see our review on his recent work in this No.), and Ramon y Cajal in embryos and young animals, K. reports his own results with Golgi's method. He reproduces the microscopic section of the chiasma of a sheep embryo, in which he could ascertain a small number of direct optic fibres, bending at right angles from the tractus to the homolateral optic nerve. In cats, two or three days old, he found a much greater quantity of direct fibres. They were chiefly accumulated at the lateral margin of the chiasma, but were also observed in the center and the medial portions of the optic nerve.

Without knowing of the discovery of Ramon y Cajal (see our review in the April No., page 373), K. detected bifurcations of optic fibres, one branch running to the homonymous, the other to the opposite tractus, so that by these, one and the same portion of the optic nerve would communicate with both visual centers of the brain.

Unilateral fibers were also found in the dog, cattle, pig and rabbit, as well as bifurcations (with the exception of the pig). Weigert's method gave the same result in young cats, but in human chiasmas not more than two unilateral fibres in one section. Therefore, K. thinks that, from the facts so far ascertained in man, it is impossible to infer the existence of a larger number, or a number of any amount at all, of direct optic fibres. However, he does not want to pass a conclusive opinion in this difficult question, although he is certain that the conclusion of Ramon lacks so far sufficient proof, that, because unilateral fibers exist in the cat, they must also be present in the dog, monkey and man. K. considers it appropriate to postpone physiologic questions, which might be elicited from his anatomic investigations, until the microscopic structure of the chiasma has been more clearly elucidated.

K. was one of the few who opposed the assumption of a partial decussation of the optic nerve fibres, and his authority as one of the most eminent anatomists imparted his opinion considerable weight. His "new observations" in favor of the existence of unilateral fibres are therefore of especial interest and value, so that we most warmly recommend their study to every one of our readers.

C. ZIMMERMANN.

## The Animal Parasites of the Eye.

KRAEMER, A., M. D., P. D., Zürich. (Chapter XVIII of Graefe-Saemisch, Handbuch der gesamten Augenheilkunde, 2nd edition, Leipzig, 1899. Wm. Engelmann, No. 10 and part of Nos. 9 and 11. Price of each No. 2 M , 50 cents.)

The second edition of this great handbook is practically an entirely new work. Not only have collaborators of the first edition adapted their contributions to the progress of ophthalmology and general medicine of the last 25 years, but some articles have changed authors, appearing in an entirely new form, while an addition of 12 perfectly new chapters has been made. One of these is that by Kraemer on animal parasites of the eye.

After an introduction on the history, etiology and pathogenesis of parasitic eye diseases, K. deals first with the affections by ektoparasites, foremost of which is phthiriasis of the cilia and supercilia. It is caused by phthirius pubis, whereas the occurence of phthirius capitis is very rare; only two cases are published. The latter may, however, produce relapsing conjunctivitis and blepharitis if its faeces are accidentally, by means of the hands, conveyed from the head to the conjunctiva. Its symptomatology, subjective, sensations, differential diagnosis from blepharitis squamosa and eczematosa are given in detail. The treatment devised by Jullieu is recommended, viz., careful washing of the ciliary borders with diluted acetic acid by which the paste agglutinating the eggs on the cilia is dissolved, and then rubbing with sublimate solution 1:1000. K. mentions that the color of the animals and their eggs varies in different races of man.

(According to Charles Darwin, Descent of Man, p. 169, A. Murray has carefully examined the pediculi collected in different countries from the different races of man; and he finds that they differ, not only in color, but in the structure of their claws and limbs. Thus Darwin concludes: "the fact that the races of man being infested by parasites, which appear to be specifically distinct, might fairly be urged as an argument that the races themselves ought to be classed as distinct species." Reviewer.)

Severe inflammation of the lids, conjunctiva and cornea, even with the loss of the eyeball, may be caused by the stings of bees, wasps and leeches Very rarely the cornea is invaded by insects. Saemisch recently observed sarcoptes scabiei in a corneal infiltration. The chief material of ocular affections due to flies and spiders is found in the tropics. Lately Raehlmann described a blepharitis acaria caused by demodex folliculorum in the crypts of the cilia, which destroys the sheaths, roots and papillae of the cilia. Raehlmann found them also in 25 per cent. of his cases of trachoma.

(Joers, Deutsche Med. Woch., 1899, p. 220, denies the dependence of certain forms of blepharitis on acarus foll., since he found them in 64 per cent. on normal ciliary borders without the least symptoms.—Reviewer.)

Under III K. describes in detail, with casuistics, the diseases of the eye produced by endoparasites, viz., cysticercus of the lids and surroundings, conjunctiva and orbit, entering closely into the differential diagnosis, especially from encephalocele, and the mode of operating, giving due importance to the temporary osteoplastic resection of the external orbital wall devised by Krönlein. 20 pages are devoted to the occurrence of filaria loa under the conjunctiva, in the anterior chamber, vitreous and orbit. The reports of its presence in the lens are more than doubtful. It is very difficult to decide whether the filaria, found in the eye, is exclusively filaria loa, which inhabits the West coast of Africa and is found only in people who came from there, or other kinds like filaria medinensis. K. gives a description with pictures of the entozoon by Hirschberg, its occurrence in, and removal from the anterior chamber, according to the observations of Coppez. Our knowledge of filaria or trichina in the vitreous is very imperfect, as in the cases published it has been mistaken for persistent hyaloid artery. The only certain case was the one of Kuhnt who removed a larva of filaria (or strongylus) by a meridional horizontal section of the sclera from the vitreous at the macula lutea. The clinical history and operation with picture of the ophthalmoscopic condition and the worm are verbally reproduced. It seems most probable that the immature larvae of filaria loa, circulating in the blood of 50 per cent. of the negroes of Old Calabar, are sucked with the blood by mosquitoes and develop in the abdomen of the latter. From mosquitoes falling into the water and being decomposed the larvae are set free, infect the drinking water, and thus find entrance into the human stomach and by the blood current spread into the body.

Trichina spiralis may cause edema of the lids, conjunctiva, orbit with subsequent exophthalmus, paresis of ocular muscles, accommodation and mydriasis.

Part V comprises almost 100 pages and is an excellent and exhaustive treatise, with colored plate, on intraocular cysticercus, its symptoms, pathologic anatomy of 29 cases, with clinical histories and operations. Owing to the inspection of meat in Germany this formerly frequent and most dangerous entozoon of the eye occurs more rarely from year to year.

An extensive bibliography in chronological order is annexed to this interesting chapter. C. ZIMMERMANN.

### The Nuclei and Roots of the Ocular Nerves, Their Connections and Their Relation to the Cortex of the Brain.

BERNHEIMER, DR. ST., Innsbruck. (Chapter VI of Graefe-Saemisch, Handbuch der gesamten Augenheilkunde, 2nd edition, Leipzig, 1900, Wilhelm Engelmann. No. 16 and part of No. 15. Price of each number $0.50, 2 M.)

A thorough knowledge of the more minute anatomic relations of the optic and ocular nerves to the brain is of paramount importance for the correct interpretation of eye diseases in affections of the brain. Although many questions are still to be answered, the nuclear regions of the ocular nerves have been very satisfactorily investigated by the methods of Weigert (development of the medullary sheaths), Marchi (artificial and natural degeneration) Golgi and Nissl (artificial and natural primary irritation.) It is most gratifying that this important and new chapter has been intrusted to the author who has taken a foremost part in these difficult researches.

The optic nerve is chiefly a centripetal nerve, whose fibres originate in the ganglia of the retina and end as dendrites in the primary optic centers, communicating with the ganglion cells of the latter only by contact. Therefore the primary optic centers are not the roots, but the terminal nuclei of the optic nerve. Centrifugal fibres, found in birds by Ramon and Dogiel, have not been observed in man, and their physiology is not yet known. The author ascertained that the medullary sheath of all optic fibres develops from the centre toward the periphery, i. e., in an opposite direction as the cylinder axis. The microscopic structure of the chiasma is described according to the author's own investigations on horizontal and sagittal Weigert serial sections of human chiasms of immature and mature embryos. The commissures of Hannover, Gudden and Meynert have nothing to do with the optic fibres proper. The lower (ventral) half, of the chiasma contains almost exclusively crossed fibres, which are arranged in form of an S., running with their greatest convexity (loops) somewhat into the homolateral tractus, then bending under right angles through the chiasma toward the opposite optic nerve, turning again (loops) and spreading into the opposite tractus. Bernheimer was the first to furnish the mere anatomic proof of the direct optic fibres in the chiasma of a child, aged 10 days, by tracing fascicles and single fibres uninterrupedly from one optic nerve into the homolateral tractus in the same section of the upper, dorsal, half of the chiasma. B. mentions especially that neither von Michel nor von Koelliker ever reproduced sections of the upper half of the chiasma and therefore could not find direct fibres. He also saw bifurcations of the thicker optic fibres before knowing of Ramon's similar discovery. [See our review in April No. p. 373 and on Koelliker's new work in this No.] From his material of 35 human chiasms and 10 cases of artificial degeneration in monkeys B. describes, with schematic drawings, the distribution of the direct and crossed fibres in the different portions of the optic nerve. They are separated in two compact fascicles of almost crescentic form in the optic nerve, the direct fibers at first in the upper and lower, and then in the lateral portions; in the chiasm a gradual transition and intermixture takes place, which is complete in the last third of the tractus. He acknowledges the proportion of 2:3 of direct to crossed fibres, but inclines to assume an equal amount of both. At least 70 per cent. of all optic fibres terminate into the lateral corpus geniculatum, the crossed and direct fibres in almost equal numbers. The arrangement of both is such, that in the whole external corp. genic. crossed and direct fibres are almost equally distributed, mostly in double breast. Another portion of the tractus spreads into the anterior corpus quadrigeminum, crossed and direct fibres being also equally distributed. They end in the region around and below the aqueduct of Sylvius and seem to touch upon the cells of the nuclei of the oculomotor nerves, thus subserving rather to the conduction of visual reflexes than to vision. The course, termination and origin of the optic fibres in the optic thalamus is very complicated, but the terminal ramification of each fibre seems to act on a large number of cells. Another fascicle of the optic tractus goes to the corpus Luysii. The internal corpus geniculatum, however, is surrounded and penetrated by optic fibres, but is not, as formerly supposed, a nucleus of the optic nerve. All macula fibres are contained in the 70 per cent. of the optic fibres terminating into the corpus genic. laterale.

The nuclei of the 3rd nerves are situated in the region of the anterior pair of the corpora quadrig. under the acqueduct of Sylvius and consist of two lateral chief nuclei, 2 medial small-celled ones and a single large-celled median nucleus. The anterior half of the former contains only direct fibres, $^3/_8$ of the posterior half mixed, and the posterior eighth only crossed fibres. Crossed and direct fibres run separately on their whole extranuclear path and unite in the nerve stem just before leaving the brain. The lateral chief nuclei supply the exterior muscles, the medial small-celled nuclei very likely the sphincter pupillae of the same side, and the large-celled median nucleus the accommodation of both eyes, as B. found by his anatomic studies and physiologic experiments.

In concordance with Kausch, B. describes the nucleus of the 4th nerve as a caudal portion of the nucleus of the 3rd. All fibres of the 4th nerve decussate completely in the velum medullare anterius. whereas the fibres from the nucleus of the 6th nerve, at the floor of the 4th ventricle, run directly to the nerve of the same side. The nucleus of the facial nerve shows two indistinct portions, but a connection of the fibres, supplying the orbicularis and frontalis muscles, with the nuclei of the 3rd and 6th nerves does not exist.

The nuclei of the various ocular nerves communicate through the dorsal longitudinal fascicle which is anatomically proved, as well as the relations of the optic nerve to the nuclei of the 3rd nerve, for the reflex path of the pupillary reaction, and to the nuclei of the other motor nerves of the eye. The ganglion cells of the primary optic centres are the origin of the cerebral neuron of the optic fibres. The optic fibres run in the centre of the radiation of Gratiolet and diverge into all 6 gyri of the occipital lobe, not equally, but chiefly into the medial ones: cuneus, fissura, calcarina, lobus lingualis and gyrus descendens. They end into terminal trees, and by means of the intercalary cells, come in contact with the ganglion cells of the occipital cortex. Thus these gyri represent the field of projection of the corpus geniculatum and, through this, of the corresponding halves of the retinæ. The fibres run in the same fashion from the thalamus and anterior corpus quadrigeminum into the lateral portions of the occipital lobe, which also receive association fibres from the temporal lobe and the nuclei of the ocular nerves. These topographic conditions very strongly suggest functions for the synergic movements of the eye, and relations to the organs of speech and the muscles of the arms. For the explanation of the preservation of central vision in cases of bilateral hemianopsia B. prefers the hypothesis of von Monakow, viz., that the macula fibres are in contact with almost all portions of the corpus geniculatum, which would still allow of a central visual perception, as long as only a few fibres between primary optic centres and cortex would remain intact. B. discusses from his numerous recent experiments on monkeys the path of the ocular nerves to the cortex, the central and cortical mechanism of the ocular movements, and especially the synergic motions. The angular gyrus is the only cortical field of the synergic ocular movements. The right one influences the movements to the left, and to the left upward and downward. The anterior corpora quadrigemina are neither a reflex centre nor a path for the ocular movements. The communicating neurons of the nuclei of the ocular nerves to the cortex of the angular gyrus all decussate in the median line below the level of the aqueduct of Sylvius. The decussating fibres of one angular gyrus are able to equally influence certain synergic muscles of both eyes.

B. has solved his task admirably in giving a clear and very readable expose of this difficult chapter. another proof of the excellence of the great handbook which ought to be in the hands of every ophthalmologist. C. ZIMMERMANN.

## Microscopic Anatomy of the Optic Nerve and the Retina.

GREEFF, PROF. R (Graefe-Saemisch, Handbuch der gesamten Augenheilkunde, 2nd Edition. entirely rewritten, Chapter V, 48 pages of No. 17 and 144 pages of Nos. 20 and 21. Leipzig, 1900, issued May 14th, Wilhelm Engelmann. Subscription price of each number, about 80 pages, 2 M. or 50 cents.)

According to the so-called contact theory, advanced by Golgi, Ramon y Cajal and others, the optic path shows 4 interruptions by 5 neurons. The first neuron is the visual cells of the retina, the 2nd the bipolar cells, inner nuclei, the 3rd the ganglia of the retina, the axis cylinders of which are the optic nerve fibres with their terminal trees in the primary optic ganglia of the brain, whereas the cells of the centrifugal fibres lie in the primary optic ganglia and the terminal trees in the retina. The 4th neuron extends from the primary optic ganglia to the cuneus, and the 5th are the associations with the frontal, temporal and occipital lobes. Thus the optic nerve, from the eyeball to its entrance into the brain, is the 3rd neuron.

Instead of describing histologically in succession the various portions of the optic nerve, G. prefers to demonstrate the changes which the several structures undergo in them. First the three sheaths and the septa are minutely described according to the most recent investigations, then the histology and arrangements of the optic fibres according to the new researches of Ramon y Cajal (which we have reviewed in the April No., p. 373) with drawings. The neuroglia which permeates the optic nerve from origin to end resembles exactly the neuroglia of the white substance of the brain, so that the optic nerve differs from all peripheral nerves except the olfactory and is to be considered as a portion of the white substance of the brain advanced into the periphery. The peripheral septa and the peripheral atrophy of Fuchs are discussed in detail, but the latter not as a pathological condition, for which, therefore, G. proposes the name "peripheral glia coat of the optic nerve." The corpora amylacea are found mostly in atrophic optic nerves, but also in normal individuals, especially in old people and constantly in some animals. An appendix of comparative anatomy with sections of the optic nerves of different animals shows the great variations of the septa. Especial attention is given to the entrance of the optic nerve into the globe, the shape of the end of the intervaginal space with regard to the different states of refraction and ophthalmoscopic appearance, the lamina cribrosa and the optic disc which shows a diameter of 1.6 and not 2.1 to 2.7 mm. as quoted in the 2nd edition of von Helmholtz's Physiological Optics. G. does not quite accept the theory of Koenigshoefer, that the acuteness of vision depends on the greater longitudinal diameter of the disc in proportion to the size of the eye.

The lymphatic spaces, i. e., the supravaginal, between Tenon's capsule and dura, and the subvaginal, consisting of subdural and subarachnoidal spaces, subserve the lymph current and are not simply articular spaces according to F. Langer, since they are lined with a continuous endothelium and communicate with each other.

In a historic introduction on the histology of the retina, G. points out the perfectly new period inaugurated by the Osmium-Bichromate-Silver method of Golgi and the staining of living tissues with methylen blue devised by Ehrlich, which created a revolution in the minute anatomy of the nervous system in general. The investigator who gave the clearest and most complete proof of the connection of the nervous elements of the retina is Ramon y Cajal, who introduced a new nomenclature. G. gives in tabular arrangement the measures of the thickness of the different strata of the retina varying with their distances from the margin of the disc, and describes in detail their microscopic anatomy. As the Hematoxylin cross sections allow of a more clear orientation, G. retained in the headings the more familiar names of the layers, according to H.

Müller and M. Schultze but follows in the detailed description the neurons of Ramon y Cajal. A schematic drawing of a hemotoxylin section is placed next to one according to Golgi's method with corresponding nomenclatures.

The pigment epithelium is described after the investigations of Kuehne, who designated the pigment, formerly called Melanin, as different from that of the choroid, Fuscin. The guanin in the white retinal tapetum of certain animals (fish, crocodile) is of especial interest, as, according to the researches of Abelsdorff, it allows of observation of the visual purple (in front of it) with the ophthalmoscope. After seclusion in darkness the fundus of such an eye appears at first red like a rose, until, by exposure to the light, it gradually commences to grow pale and finally becomes glaring white. All colored pictures on two lithographic plates and the figures in the text are not schematic, but all drawn exactly from preparations made by G., and of the same microscopic diameter to allow of an exact comparison of the different measures. G. found the largest cones in fish, and the largest of these in the bass, very small and various ones in the frog, and the finest in the fovea of birds. The morphology of the cones of the human retina varies considerably with their situation in the retina. Fig. 36 is very interesting, as it represents the most complete series of various forms and measures of cones, so far known, which G. was fortunate enough to secure from several perfectly fresh and normal human eyes. The contractility of the rods, the oil globules of different colors (chlorophan, xanthophan, rhodophan), the myoids of the cones, so called by Engelmann, and all that is known of these subtle structures is discussed according to the latest researches, in which G. took an active part himself. As to their nature, the rods and cones are special cells which differ from the nervous and neuroglia cells on account of their particular mode of development. From a histogenetic standpoint the cones might be considered as more highly developed rods, in which the descending processus have been perfected by basilary filaments. The external granulated layer is called plexiform layer, as it contains fine nerve fibres which form plexus, and in sections, of course, 'appear granular. The VI or inner nuclear layer shows the horizontal (ganglia) bipolar and amakrine cells. The remainder is not yet printed. What we have said of other chapters of the great handbook is especially true of this one, than which no more thorough and reliable work on the subject can be wished for. It is a pleasure to study it.

C. ZIMMERMANN.

## Microscopic Anatomy of the Lens and the Zonula Ciliaris.

SCHULTZE, O. PROF., Würzburg. (Graefe-Saemisch, Handbuch der gesantem Augenheilkunde, 2nd Edition, Chap. IV, entirely newly written, 30 pages of No. 17, Leipzig, 1900, Wilhelm Engelmann. Subscription price of the whole number, 78 pages, 2 M. 50 cents.)

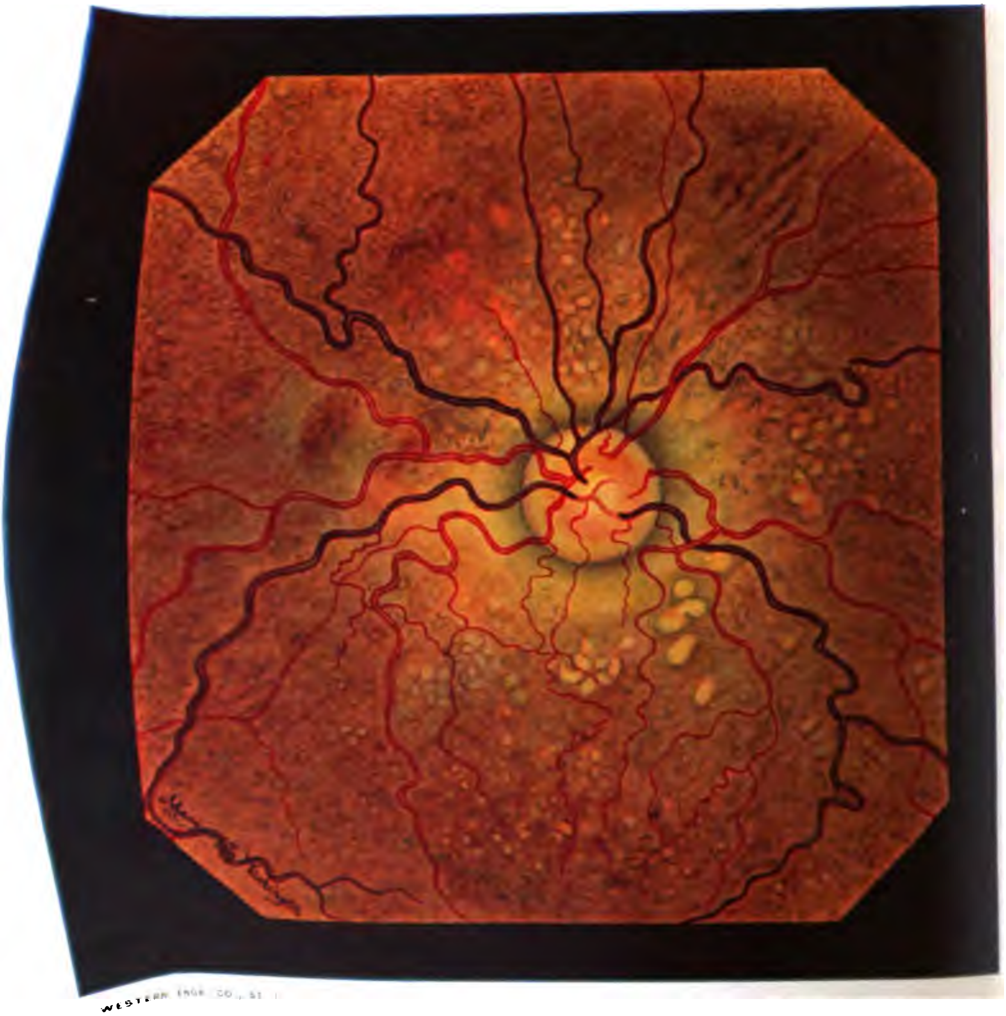
The first edition of this chapter by Prof. I. Arnold appeared in 1874. It has been remodeled by the present author according to the advancement of science, which may be noticed even externally, in that a number, referring to the bibliography at the end, is added only to the names of those authors whose investigations were published after that year, 86 in all. Among these we mention especially the elaborate work of O. Becker, and the most recent one by C. Rabl.

The lens fibres are arranged with their broad sides parallel to the surface of the lens, and thus form radial lamellæ. Rabl found these in all vertebrates and their number in mammals of the same family in direct proportion to the size of the animals. In man they amount to over 2,000. The stars formed by the commissures of the lens fibres on the anterior and posterior surfaces of the lens can be observed on the cocainized living eye with the binocular corneal lupe. A freshly removed lens put in a solution of nitrate of silver 1-500 shows the stars as black rays on a brown ground. The fibres are S shaped and have equal lengths in the same concentral lamellæ, but grow shorter with increasing depth. The chemical substances of the lens are 60 per cent. water, 35 per cent. soluble, 2.5 insoluble albuminates (mostly globulin), 2 per cent. fat and cholesterine, 5.0 per cent. ashes. Keratin does not occur even in the oldest central fibres.

The capsule is very elastic, but differs from the elastic tissue by its lesser resistance against acids. The epithelium of the capsule is the matrix for the new lens fibres, not only during the growth of the lens, but also in the physiologic regeneration of the lens fibres, while the oldest elements probably die and are absorbed in the center of the lens. The capsule itself grows with the lens, and is probably also an epithelial formation and a product of secretion of the lens substance.

The ciliary zonula consists of very resistant fibres which, according to Schwalbe, are the metamorphosed anterior portions of the hyaloid membrane, while S. follows the opinion of those who consider them as a continuation of the limitans interna of the retina. The fibres of the zonula run alternately to the anterior and posterior surfaces of the lens, without crossing, where they unite with the capsule in a ring which is called the zonular lamella. 22 very good figures facilitate the understanding of this rather intricate subject, which is very well and exhaustively treated by the author.

C. ZIMMERMANN.



WESTERN ENGR. CO., ST.

THE ANNALS
OF
OPHTHALMOLOGY.

VOL. IX. OCTOBER, 1900. No. 4.

# DIFFUSE PUNCTATE CONDITION OF THE FUNDUS.*

EDWARD A. SHUMWAY, B. S., M. D.,

PHILADELPHIA, PA.

WITH COLORED PLATE AND TWO ILLUSTRATIONS IN TEXT.

The condition presented by the patient whom I bring before you this evening, while not unknown, is sufficiently infrequent to justify the report of an additional case. The patient was seen in the eye clinic of the Howard Hospital, in the service of Dr. Wm. Campbell Posey, by whose courtesy I am enabled to show her. The history is as follows:

A. J., colored, aet. 35 years, married, native of Baltimore. Her paternal grandfather was white, and her maternal great-grandfather was half white, half American Indian. Her father and mother were not related, nor have there been any intermarriages in the family. Her mother died six months ago from "catarrh of the stomach," and had been operated upon some years before for cancer of the breast; she had also suffered from repeated severe attacks of rheumatism. Her father is living, at 73 years of age, but is almost blind; she says he suffers considerable pain in the eye, but she does not know to what the condition is due, and as his home is in Baltimore, I have been unable to examine him. There is a marked family history of migraine. Her mother had periodic, intense pain in the head, and was "confused" during the course of each attack. A brother and a sister suffer also from similar headaches.

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*Read by invitation before the Section on Ophthalmology of the College of Physicians of Philadelphia, February 20th. 1900.

At five years of age, our patient fell striking her head with sufficient force to make her unconscious for some time; after this she was never well, and was unable to run and play with other children. She has had several acute attacks of rheumatism, involving the large joints, and compelling her to use crutches, as well as a number of subacute attacks in the smaller joints. Married at the age of 21, she was compelled to leave her husband, on account of his dissolute life, and her history succeeding this time is one of constant illness. Thirteen years ago her left ovary was removed, and an operation done for retroversion of the uterus. In addition she has been in various hospitals for inflammation of the stomach, and of the bowels, has had an acute attack of the grippe, two severe attacks of nervous prostration, and a number of minor ailments. The menstrual periods have always been irregular, painful, and quite profuse, but in this respect her health has been better since the gynecological operations. She has borne no children, although married a second time, in 1896. No history of syphilitic infection can be elicited from her; she admits, however, a veneral sore 13 years ago which was followed by suppurating bubo in the groin. As a result of the continued ill health, and of her naturally nervous disposition, she has lapsed into a condition of profound neurasthenia. She is very nervous, easily excited, and as easily depressed, and on several occasions has contemplated suicide. A careful examination by Dr. F. Savary Pearce, in the nervous clinic of the hospital revealed, however, "nothing of scientific neurologic interest, beyond the general ovarian neurosis, associated with the ovariotomy, and no uterine demonstrable disease."

The eye history elicited is one of periodically repeated supra-orbital headaches, which frequently occur in connection with the menstrual periods. These attacks have been especially severe since the beginning of the ovarian trouble. They start with a blurring of vision, and are followed by intense photophobia, and a feeling of general weakness. On several occasions this has been so marked that she has fallen in a faint. On the appearance of the headache, her throat, nose and ears become very sensative. Noises of any kind can not be tolerated; she closes all windows and doors, ties up her eyes and ears, and remains in the darkness while the attack lasts. There is also some difficulty in speech, which prevents her using the right words. Very frequently there is an associated numbness of the right arm, especially of the two inner fingers, and at times severe pain and twitching of the right arm and leg. The attacks are always succeeded by an intense weakness and depression. She has worn glasses constantly since 17 years of age, by a doctor's prescription; these have helped the asthenopic symptoms which she felt on reading, but have not controlled the attacks of migraine.

She came to the Howard Hospital Sept. 1, 1899. Without correction O.D.V. was 6/22.5; O.S.V.6/30. Under homatropin and cocain O. D. V. with + 2.00 D. cyl axis 90° was 6/6. O. S. V. with — S. 0.50 D. ⊂ + cyl 2.75 D. axis 105° = 6/7.5. At 6 m. there was a left hyperphoria of 1/2°, and esophoria of 1/2°. At 25 cm. esophoria of 4°. The patient was extremely nervous, the mucous membranes were pallid; eyes quite prominent, sore on movement, and tender on direct pressure. All external movements of the globe were good; the pupils were equal, and the irides reacted promptly. The entire body was hypersensitive, especially around the back and chest, with a spot of marked tenderness on the spine in the dorsal region. Pressure over the ovarian regions caused pain. The knee jerks were exaggerated and pain was complained of when the test was made. There were no areas of anesthesia in the body.

It is, however, to the peculiar appearance of the fundus that I wish to call your especial attention. I have had a sketch in color made of the left eye, by Miss Margaretta Washington, which represents it fairly well, and is of more value as a record than a verbal description. The condition in the two eyes is exactly similar. The media are clear, although at the last examination I noticed a decided prominence of the physiological sectors at the posterior pole of the lens in the left eye. The disc is normal, and shows an indistinct pigment ring surrounding it, such as is usually found in the darkly pigmented eye of a negro. The entire fundus, except directly in the macular region is studded with innumerable, closely aggregated, dull, yellow, or yellowish-white spots. These spots vary greatly in size: those surrounding the macular region are several times the diameter of the retinal vessels, and are irregular in shape, as though from coalescence of several small spots, while those in the periphery are much smaller, are more nearly circular, and are about equal in diameter to that of a retinal vein. They are soft in outline, are not elevated, do not glisten, and, as a rule, are not surrounded by any decided pigment ring. The retinal vessels pass undisturbed over them. In no part of the fundus is there any deposit of pigment in the retina; nor are there any areas of choroidal atrophy. The retinal vessels are normal, except for a moderate degree of tortuosity of the veins. Outside of these peculiar spots, the fundus is entirely normal.

The field for form, as shown by the accompanying charts, is practically normal; those for colors—red and green—are somewhat reduced, but scarcely more than is common in clinic patients of average intelligence. There is no history of night blindness, and the fields taken in reduced light, show no decided contraction in extent. Careful examination has detected no scotomata.

The left nostril is somewhat occluded, and Dr. E. L. Vansant, who kindly examined her, writes that she has a "deviated septum, with hypertrophy of the lower turbinated bone on the left side; and hypertrophy of the faucial tonsils with cheesy deposit in the follicles." No bone disease or involvement of the accessory sinuses was found. The lungs are entirely normal; heart irritable, but no organic valvular disease is demonstrable. Urine examination revealed no abnormal constituents.

The patient states that the spots were seen and demonstrated by Dr. Edward Jackson, in his clinic at the Polyclinic Hospital, 7 years ago. Unfortunately, however, no record of the examination could be found at the hospital.

I have had the opportunity of examining the eyes of her sister, two years older, who, as I have previously stated, suffers also with periodic headaches, but no change of any kind could be found in the fundus. The brother's eyes I have not seen.

The patient is interesting on account of the family history of migraine, present in mother, two sisters, and a brother, and aggravated in her case by the irritation of the entire nervous system, as a result of the almost constant illness; but chiefly of interest for the appearance of the fundus. This has been seen by several members of the Section, but the condition has been variously interpreted, and I would like to get the opinions of the other members as to the exact diagnosis.

Punctate conditions of the fundus are not uncommon. The best discussion of them I have found in Frost's "Fundus oculi" (p. 199), and the majority of cases have been reported by the English surgeons. Mr. Frost makes the following divisions:

(1) Gunn's dots: Minute, pale yellowish dots, occurring in groups in the yellow spot region; chiefly in young eyes.

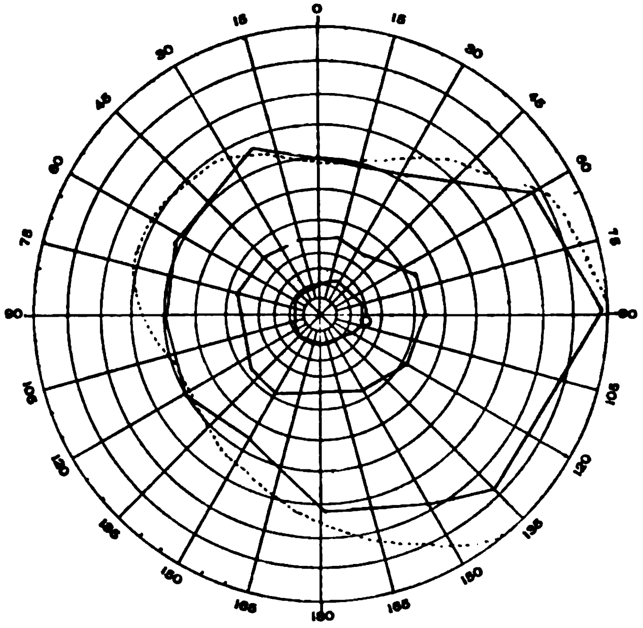
(2) Metallic dots: Minute, isolated dots, occurring in any part of the fundus. Conspicuous from their brightness.

(3) Neuritic dots: Irregular in shape, of chalky whiteness, in Y. S. region, and between this and the disc. Associated with signs of neuro-retinitis.

(4) Isolated dots: Few in number, white in color, found in old persons, and probably due to excrescences on the lamina vitrea of the choroid.

(5) Nettleship's dots: Numerous minute, *dead white*, round dots, uniformly scattered between the macula and periphery, associated with pigment changes at the periphery, and with night blindness, occurring in several members of the same family. Such cases were reported by Nettleship (Trans. Ophth. Soc. U. K., Vol. VII, p. 301 and Vol. VIII, p. 163) and are considered by him to be identical with one described by Mooren (Fünf Lustren Ophtalmologischer Wirksamkeit, 1882. p. 216) under the title of "retinitis punctata albescens" and with those of Gayet (Arch. d'Opht. III p. 386) and of Dor (Ibid p. 481). (Mooren's case was thought by Wedl and Buck (Path. Anat. des Auges, p. 215) to be due to the presence of small disseminated cavities in the outer layer of the retina.)

(6) A class of cases described variously as "Tay's choroiditis" (Ophth. Hosp. Rep. London, VIII, p. 231,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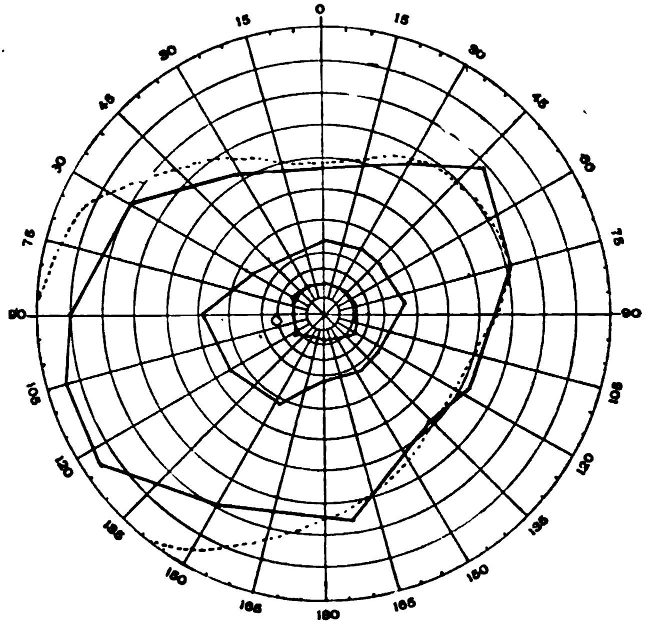
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1875), "Infiltration vitré de la rétine" (Masselon, 1884), "Punctate retinitis," and "central senile guttate choroiditis." These dots are round, pale yellowish, about the diameter of the primary retinal arteries, and occur chiefly in the central region of the fundus. They are met with, as a rule, only in persons in middle life, and are well illustrated by a paper by Nettleship in the Trans. Qphth. Soc. U. K., Vol. IV. p 162. Treacher Collins reports a similar case (Trans. Ophth. Soc. U. K. VIII, p. 177) and believes it due to colloid disease of the choroid.

7. Dots resembling Tay's choroiditis, occasionally met with in the eyes of younger persons, very numerous and not limited to the macular region. The condition remains without appreciable change for many years, and is not, as a rule, associated with any impairment of vision, although in some cases there has existed a slight degree of night blindness, and, in a few, slight contraction of the visual field.

(Here I think my case should be included.)

Finally, Dr. deSchweinitz has described (Trans. Am. Ophth. Soc., 1894, p. 214) a condition of colloid disease of the macula, with a collection of variously shaped, chiefly rounded, yellowish, or yellowish white, slightly prominent bodies, lying beneath the retinal vessels.

The condition presented by the patient resembles very much the description of the cases usually recorded under the name of "senile guttate choroiditis," or Tay's choroiditis, except that it occurs in a comparatively young patient, and is not limited to the macular region. It differs entirely from the appearance due to the presence of the druses of the lamina vitrea of the choroid occurring in old people, as in the latter the spots are isolated, prominent, and surrounded by a ring of proliferated pigment epithelium. Nor does it resemble Mooren's "retinitis punctata albescens," and the cases reported by Nettleship, Gayet, and Dor, for the spots here were "dead white," perfectly round, and as Mooren says, "as though made with a punch." Moreover, in these patients night blindness is usually present. Dr. deSchweinitz's cases, too, have an entirely different appearance. The exact position of the changes is perhaps impossible to determine. But their existence for at least 7 years, with no alteration of vision or production of scotoma, would certainly place them back of the nervous elements of the retina; and an extensive inflammatory disease of the choroid of this duration, would surely have been followed by secondary disease of the retina, and the invasion of this membrane by pigment. I think then that we can with a fair degree of certainty locate it in the pigment cells themselves. What this change consists in can be only conjectured, until an anatomical examination is made in an eye known to have presented the condition in life. So far this has been impossible. The bulk of evidence, however, seems to point to a *colloid* change in the cells. This was first mentioned by Wedl and Bock in their "Pathologische Anatomie des Auges" (p. 219) as "smaller and larger, sharply contured, transparent, strongly refractive, drop-like formations in many of the polygonal cells, nearly filling them." Dimmer in 1885 (Archives of Ophthalmology, Vol. XIV, p. 65) likewise described a colloid degeneration of the cells, which, he believes, by coalescence, may form the colloid excrescences of the lamina vitrea of the choroid. The latter are well known, and have long been described as occurring in senile eyes, in cases of phthisis bulbi, in chorio-retinitis, and in pigmentary degeneration of the retina. They occur not only on the lamina vitrea but also on Descemet's membrane, and on the inner side of the anterior capsule of the lens. Although first regarded as thickenings of these membranes, they are now usually considered to be products of the epithelial cells. Whether they are always accompanied by death of the cell, or are merely an excretory product is still a question for discussion. Their exact composition, moreover, is still unsettled, and, as in general pathology, the formation of this colloid material here is a very obscure process. It seems to be quite closely allied to the thickening and homogeneous appearance of the vessels of the choroid, which are among the most striking pathological changes, in the very conditions, in which these colloid excrescences are found, and, if secondary to them, would be an additional proof of the theory of Wagenmann and Krückmann (Archiv. für Ophfalmologie XLVIII-2), who claim that changes in the pigment cells of the retina are always dependent upon interference with the choroidal circulation.

Colloid change in the pigment cells, however, has been described clinically not only in degenerative and senile conditions, but in young persons, with good vision, and with otherwise normal eyes. In these cases, as in our patient, we can not assume the existence of pronounced vascular changes, but it is perhaps not unreasonable to believe that a disturbed nutrition, due to some undetermined blood alteration, might have the same effect as the changes in the blood vessels themselves. Such an assumption is, however, mere hypothesis. In his "Fundus Oculi," Frost gives a drawing (Plate XI, Fig. 31) which evidently illustrates the same condition. He places it in the division (7) above referred to, but gives no clinical reference, and, outside of this, despite a very careful search through the literature at my command, I have been unable to find the report of a case exactly similar to mine; and while recognizing the unsatisfactory and incomplete character of a purely clinical description of such an ophthalmoscopic appearance, nevertheless, pending a careful microscopical examination, I believe that such reports are important, and will prove of real value in determining our ultimate knowledge of these rather obscure processes.

## BIBLIOGRAPHY.

Alt.—Pathologishe Histologie.
Burnett.—Arch. f. Augenheilk., XII, p. 22.
Collins.—Trans. Ophth. Soc., U. K., VIII-177.
Critchett & Juler.—Trans. Ophth. Soc., IV-161; VII-184.
Dimmer—Archives of Ophthalmology, XIV-65.
Donders.—Archiv. of Ophtalmologie, I, p. 2.
Dor.—Arch. d' Ophtalmologie, III-386.
Frost.—The Fundus Oculi.
Gayet.—Arch. d'Ophtalmologie, III-385.
Hirschberg.—Centralblatt f. Augenheilk. VI-327.
Knapp.—Arch f. Augen. u. Ohrenheilk. IV-205.
Leber.—Arch. f. Ophtalmologie, XIX-1; XXV-1.
Masselon.—Infil. vitrée de la rétine et de la papille, Paris, 1884.
A. Meyer.—Arch. f. Ophtalmologie, XXIII-4.
Mooren.—Fünf. Lustren Ophtalmologische Wirksamkeit, 1882, p. 216.
H. Müller.—Arch. f. Ophtalmologie, II, p. 1.
Nagel.—Zehender's Monatsblätter XIII-338.
Nettleship.—Trans. Ophth. Soc., U. K., IV, pp. 162 and 164, VII-301; VIII-163.
Panas.—Maladies des Yeux. p. 649.

de Gamo Pinto.—Movimento med. chirurg. Estratto, 1894.
Rudnew.—Virchow's Archiv., LIII.
Sattler.—Archiv. f. Ophtalmologie, XXII-2.
Da Schweinitz.—Trans. Am. Ophth. Soc. 1894, p. 214.
Tay & Hutchinson.—Ophthalmic Hosp. Reports, VIII-231.
de Vincentius.—Arch. f. Ophtalmologie, XXVII-1.
de Wecker.—Graefe-Saemisch Handbuch, Bd. IV.
de Wecker & Masselon.—Ophtalmoscopie Clinique.
Wedl u. Bock.—Pathologische Anatomie des Auges. 215 and 219.

# AN IMPROVED ASTIGMOMETER.*

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With 4 illustrations in the text.

The value of any piece of mechanism designed for scientific work must be measured by its accuracy. This instrument which I have the honor of exhibiting to this Association is an improved Ophthalmometer or Astigmometer. I say improved, for I do not wish to have it thought that I am egotistical enough to claim originality in anything excepting in so far as I have, as I believe, designed an instrument which gives far greater accuracy and better results than any hitherto given to the profession. The Ophthalmometer of Javal-Schiötz is itself but a practical application of Helmholtz's original discovery, that the radius of curvature of the cornea can be determined by measuring the size of images seen reflected on its surface.

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*Read at the Eighth Annual Meeting of the Association of Military Surgeons of the United States, Kansas City, September 29, 1899.

†I have carefully compared my model with those of other makers, especially Meyrowitz Bros. Everyone who has examined the images of the mires on the cornea through my instrument say that they are more brilliant and more clearly outlined than any they have ever before seen. They thus agree with Dr. Reber and Dr. Sweet who made the same observation three years ago.

The reason the images are so much superior when seen through my instrument is due to the shape of the boxes holding the lamps; the distance of the lamp from the translucent material upon which the mires are placed; and lastly to this translucent material itself. Test one of Meyrowitz and you will notice that the strongest illumination is directly opposite the lamp shading off toward the periphery. He uses dipped or ground glass which I tried and discarded three years since. I use porcelain which I found after six months trial with various substances to be far the best. The illmination is exactly the same over the whole field. Meyrowitz' boxes are too flat thus bringing the lamps almost against the ground glass.

It has been found by careful observers that the Ophthalmometer of Javal-Schiötz' which works by *reflected* light, varies from one-half to nearly one diopter from results obtained when the accommodation is paralyzed and refraction is measured by the method known as "Skiascopy."

Inasmuch as variations of even one-fourth of a diopter may be the cause of great distress, it becomes important that we obtain the greatest accuracy possible.

Five years since I commenced my investigations into the causes for this error of which all users of this instrument were cognizant, I discovered that the primary cause lay in indistinctness of the images of the mires on the cornea. Secondly, confusion of the images of the mires by interference images of the radiating lines, circles and figures of the large disc behind the mires.

My first endeavor was to make the images of the mires more distinct by removing the disc, thus doing away with the interference images. My results were by no means brilliant. I found that I did not get much greater accuracy than before its removal. It is the small variations—say from one-quarter to one-half diopter—which I aimed to bring out distinctly.

I should state that my experiments have always been made in a darkened room. I allude to this, because many oculists use the Ophthalmometer by daylight illumination instead of artificial light. Their results are commensurate with the weakness of the illumination.

I then made a preliminary study of the cornea under *direct* illumination. On looking through the telescope at the cornea thus illuminated I found that I had a wonderfully clear distinct magnified image of the stroma and pigmentation of the iris and the anterior capsule of the lense. As the iris contracted and dilated the most minute changes were easily noted. Irregularities of the cornea not seen by oblique illumination were also observed. In some cases small pigment spots on the capsule were noted and slight adhesions were clearly revealed. These results were published in the New York Medical Record for April, 1895.

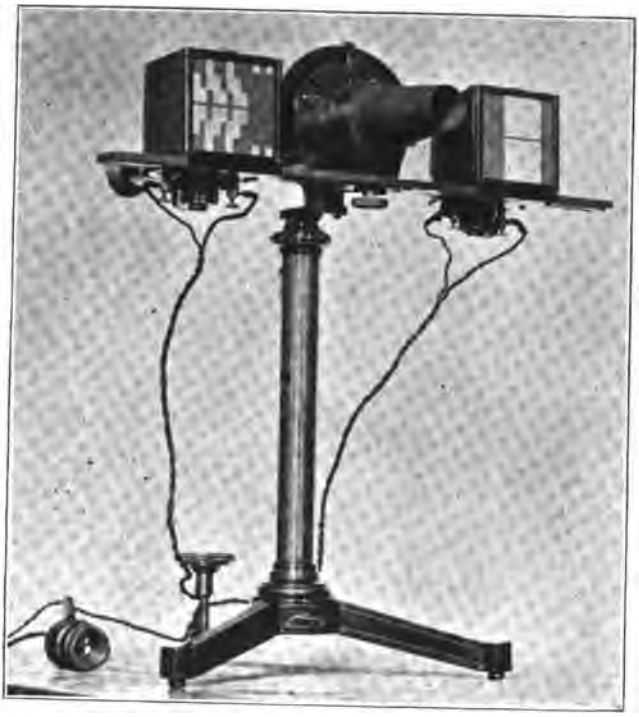

FIG. 1.

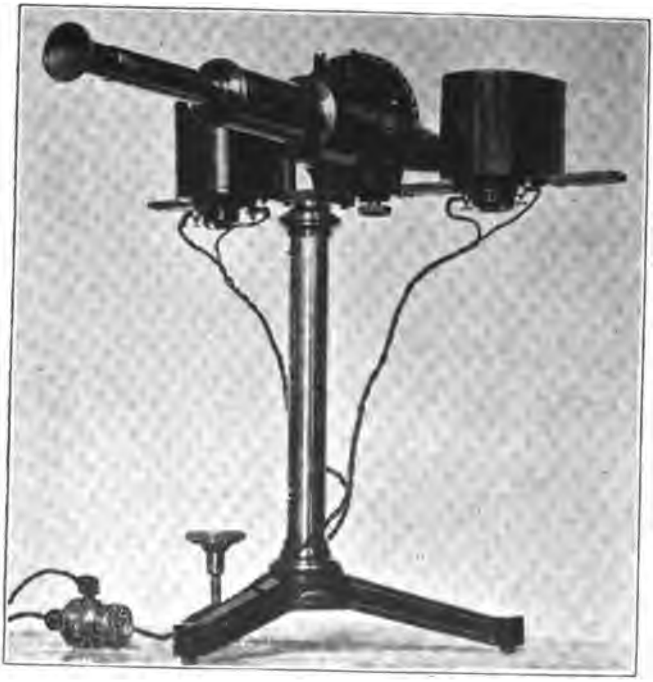

FIG. 2.

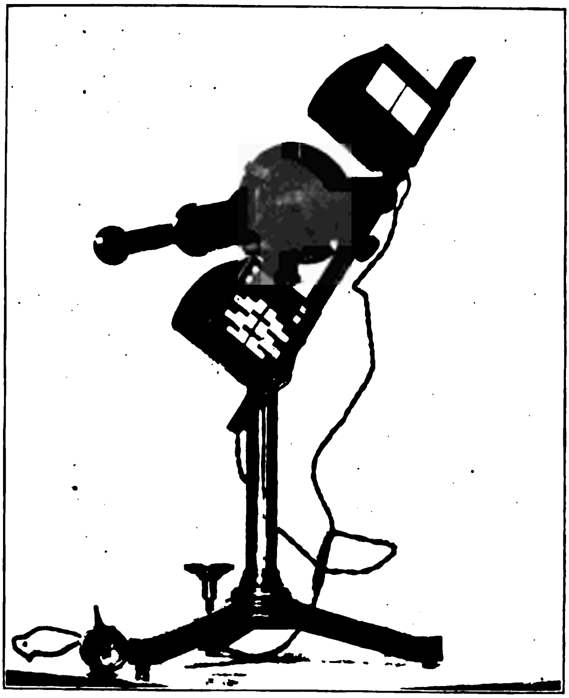

FIG. 3.

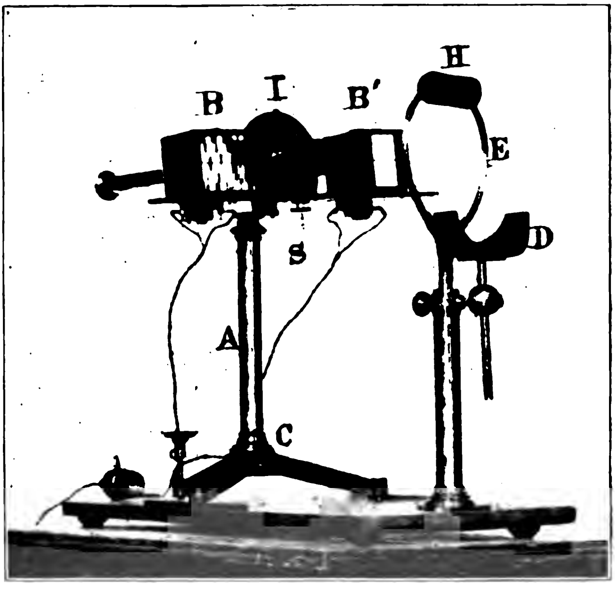

FIG. 4.—B B', Metallic closed boxes containing incandescent lamps 16 c. p. A, marks point on upright where rotation of parts above takes place. S, Screw which operates the movement of wires I, Arc and pointer.

Acting on this hint I had the outlines of the mires painted in black upon dipped or ground glass, behind which I held electric lamps having dipped globes. The result more than met my most sanguine expectations. The reflections of these mires upon the cornea by direct illumination were so much more brilliant and intense, the edges of the images so sharp and distinct in outline, apparently standing out from the surrounding dark field like the intaglio of a cameo, that I knew I had the solution of the whole matter before me.

I then had the firm of Hirsch & Kaiser of this city make for me two metal boxes each to contain a small incandescent lamp. In the front of each was a plate of ground glass upon which the mires were painted. Although the images were exceedingly sharp I discovered that while the ground glass directly opposite to the lamp was brilliant, there was rapid shading toward the periphery of the field. After many experiments with various substances porcelain was finally tried and found to be just what was desired, being translucent and equally illuminated over its whole surface.

Although the instrument was somewhat crude in its mechanism, I found that my results were exceedingly accurate.

After several months constant use I demonstrated this instrument before the Medical-Clinical Society of San Francisco.

In June, 1897, this model was placed in the hands of Dr. George M. Gould, of Philadelphia. He became so interested in my account of the instrument that he turned it over to Dr. Wendell Reber, who, with Dr. Sweet, made prolonged tests with it at the Jefferson Medical School.

Dr. Reber wrote me in the most enthusiastic terms saying the definition of the images was something wonderful, beyond anything that they had ever seen, and advised me to perfect it before giving it to the profession.

On return of the instrument to me, Hirsch & Kaiser of San Francisco, placed a trained instrument-maker at my disposal who carried out my wishes in every possible way. The instrument which I now have the pleasure of presenting is the result of this work. The improvements which I have made over the old model are as follow:

First. An original design which substitutes direct for reflected illumination. This consists in the use of closed boxes containing incandescent lamps; in the front of each is the porcelain plate before mentioned.

Second. Substituting a straight bar in place of the perimeter heretofore used. It having been demonstrated that owing to the smallness of the surface of the cornea covered by the images the variation is too small for practical measurement.

Third. The telescope, in place of being on a fixed base, is made to rotate on a horizontal plane (at "a" Fig. 4) independently of its base. "C" Fig. 4.

Fourth. A ratchet movement by which both mires can be moved to and fro thus giving greater accuracy of adjustment. In practice it has been found that the images respond to the slightest movement of the mires.

Fifth. Removal of the large disc or shield. Since the lamps are enclosed in boxes the observer is not disturbed by light being reflected into his own eyes.

Sixth. Behind the mires a fixed arc "I" Fig. 4 divided into degrees, in front of which is a pointer attached to the telescope which indicates the axis of greater or lesser meridian of curvature of the cornea.

Seventh. An improved head and chin rest by which adjustment can be made for children or adults.

As a practical working aparatus I make for it the following claims:

First. Clearness of definition not possessed by any other instrument.

Second. Sensitiveness to the smallest variations between the highest and lowest meridians of corneal curvature. The line of contact of the two images is so sharp that it is easy to read one-quarter of a diopter, since the instant an overlapping of the image takes place a faint white line is seen.

Acting upon Dr. Reber's suggestion, I made the mires in one-half steps instead of whole steps. The result was a slight appearance of overlapping of the images causing an appearance of over correction, similar to that optical illusion when two fingers are approached closely together between the eyes and the light, an apparent contact is seen before *actual* contact has taken place.

Its practicability consists also in giving us a rapid method for the determination of Corneal Astigmatism and the direction of its axis of greatest and least curvature, making it useful in rapid examination of school children's eyes and the eyes of recruits for the army and navy.

It is easy to understand that a young army recruit may respond to all the usual tests as to his visual acuteness, yet in after years devolp a train of symptoms which are traceable to the effects of eye strain due to the heretofore latent astigmatism. His enfeebled accommodative effort can no longer correct the astigmatism. In consequence he may ask of the Government a pension for partial loss of visual acuteness due, as he will claim, to causes traceable to services in the army, whereas it is probably a congenital defect.

Many years ago, when I was Examiner on the Board of Pensions in Oakland, Cal., an officer was sent to me for examination on account of loss of visual acuteness, due, as he claimed, to exposure of his eyes to bright sunlight while in the service. Examination revealed nothing more nor less than error of refraction, which when corrected gave him normal vision.

In conclusion I wish to emphasize the proposition that no claim whatever is made for this instrument beyond that of accurately recording Corneal Astigmatism.

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In a letter written to me by Dr. Wendell Reber, January 31, 1899, he stated "that he employed this method in inspecting the structure of a gummatous iris with most gratifying results."

# THE RELATIVE VALUE OF INSTRUMENTS USED FOR KERATOMETRY.*

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With 9 Illustrations in the Text.

We are indebted to the ingenuity of Javal and Schiötz in perfecting the work of von Helmholtz and giving us an instrument which has contributed much to our knowledge of astigmatism and made our search for correcting lenses no longer a wearisome, blind procedure. The ophthalmometer, or better, keratometer, has for its object the measurement of the corneal curves or radii by means of catoptric images through a telescope.

In the present stage of development all makes of instruments give us only the measurement of the curvature of the anterior surface of the cornea in its different meridians and thus enable us to form an approximate estimate of the grade and the direction of the principal meridians of corneal astigmatism when present. All ophthalmometers give us corneal astigmatism only and do not give us any clue to the intraocular astigmatism (that produced by the irregular curvatures of the posterior surface of the cornea and anterior and posterior surfaces of the lens). Theoretically, a perfect ophthalmometer should give us the measure of the total astigmatism.

The rapid advance which practical ophthalmometry is making may soon give us an instrument to measure the curvature of the posterior surface of the cornea and the curvature and obliquity of the lens, for information regarding which we must now rely on other than instrumental tests.

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*Read at the Annual Meeting of the American Medical Association, Atlantic City, June 5th to 8th, 1900.

To estimate the amount of intraocular astigmatism, Dr. Tscherning has given us the Ophthalmophacometer, but it is too complicated to be of service and general use in office work; however, by its means and through his calculations and estimations therewith, we are put in posession of facts of material value relative to the amount of intraocular astigmatism which may serve as a guide in approximating the amount of total astigmatism. Dr. Tscherning, with his instrument, has found the astigmatism of the posterior surface of the cornea and lens to be about three quarters to one diopter of an inverse character or — .75, to 1 D. We are thus enabled to calculate approximately the amount of total astigmatism after securing corneal measurements with the ophthalmometer which registers a different amount from that we are required to correct.

According to Schiötz there is generally present from .50 to .75 D of corneal astigmatism "according to the rule" when no subjective astigmatism can be made out and when the cornea shows no astigmatism there is generally found an inverse astigmatism of obout .75 D. From this data we are enabled to roughly calculate the total astigmatism which may be said to be approximately equal to the amount shown by the ophthalmometer, expressed as a myopic astigmatism combined with an inverse myopic astigmatism of about .75 D., giving us the following empirical table of Javal:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Corneal astigmatism | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Total astigmatism | — .75 | .5 | 1.75 | 3 | 4.25 | 5.50 | 6.75 |

The necessity of empirically adding to or subtracting from the ophthalmometric readings uncertain amounts can only be fallacious in determining the actual amount of total astigmatism, no matter what keratometer is used. Perfect accuracy in our refraction work is the only certainty of relief from eye strain.

In speaking of the relative value of instruments used for keratometry, I will divide them into portable and non-portable, represented by Reid and Javal principles respectively. The non-portable instruments are in all essential features patterned after the original makes of Javal, with improvments in mechanism. Essentially they consist of a telescope which contains a Wollaston or glass birefrangent

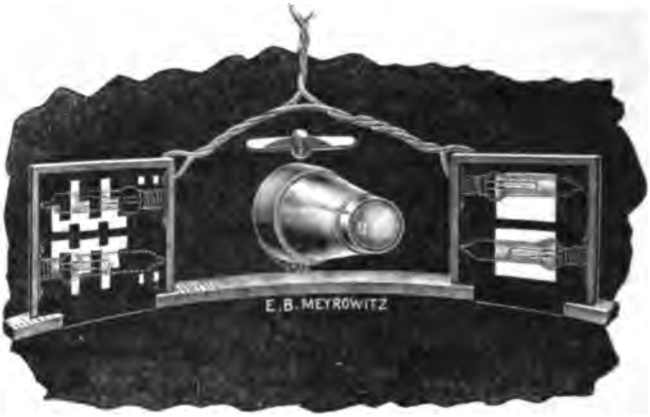


Fig. 1.—Meyrowitz Ophthalmometer, Showing Mires.

prism placed between two biconvex lenses. Attached to the telescope is a graduated arc upon which are placed two white enamelled objects, called targets, or mires, variously shaped. For focusing, the telescope is mounted on an adjustable base. The patient is seated with his chin and forehead resting in a frame. The surgeon looking through

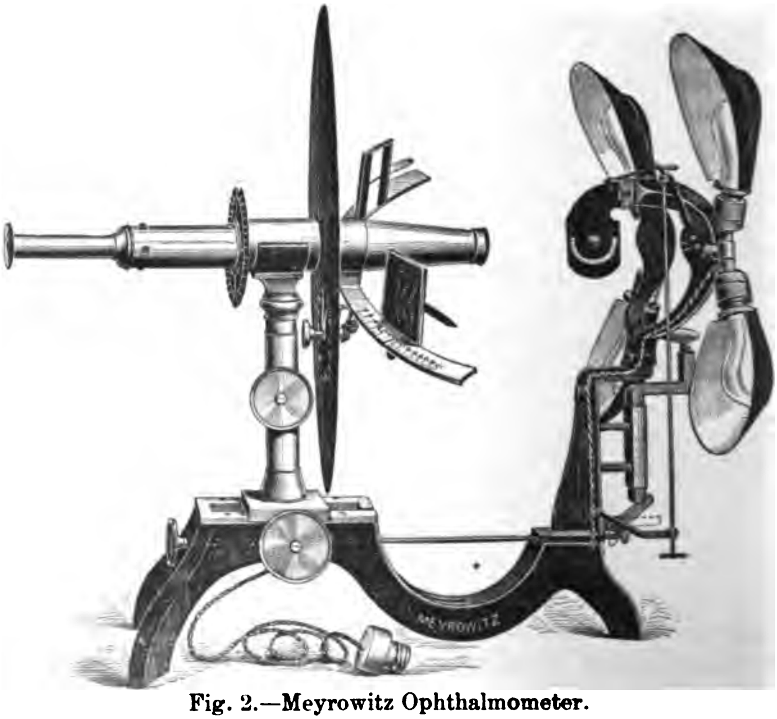


Fig. 2.—Meyrowitz Ophthalmometer.

the eye piece of a telescope, focuses the centre of the patient's cornea until he sees two images of each mire clearly. The two central images are selected for study, ignoring the peripheral. All models in use require good illumination, either strong day light, or artificial so that a clear definition of the mires can be seen.

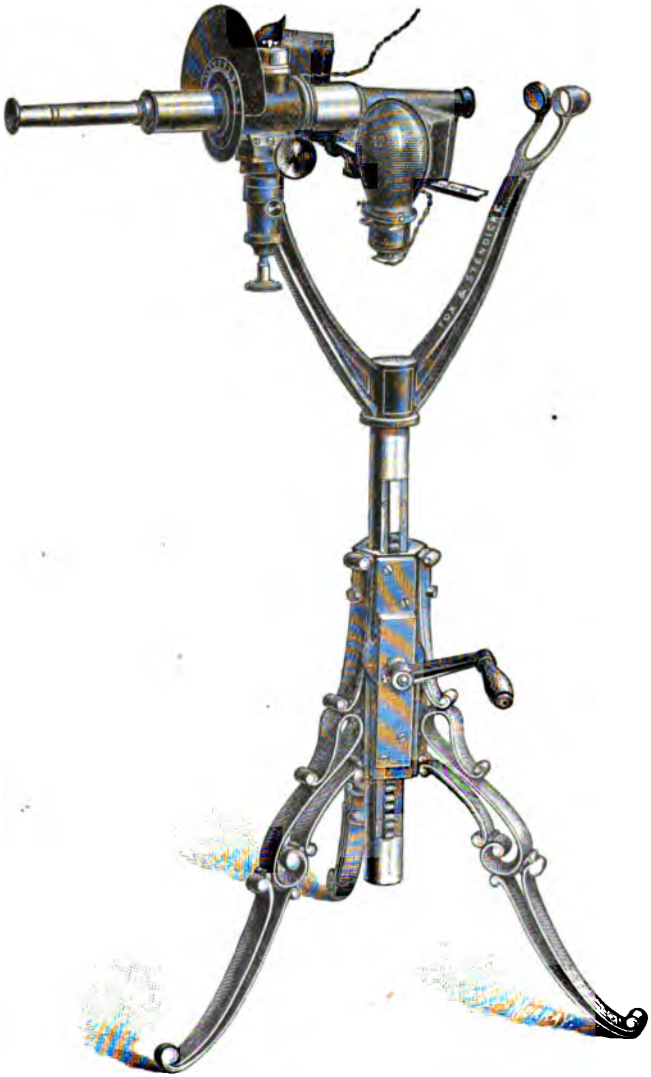


Fig. 3.—Fox and Stendieke Ophthalmometer.

The instruments having transilluminated mires (e. g., Chambers Inskeep & Co., Meyrowitz, Fox & Stendicke) are to be commended, doing away with reflection into the face of the patient. Upon proper adjustment of the telescope to the eye of the patient, a glance at the images of the mires as the arc is rotated will show whether astigmatism be present and its amount by their overlapping, regular when the images of the mires are of normal shape, and irregular when the images are distorted in one or more meridians.

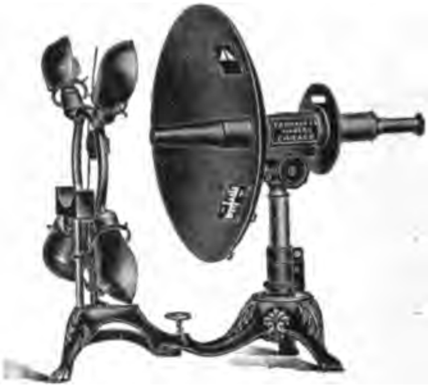


Fig. 4.—Front of Hardy's Ophthalmometer.

Irregular astigmatism and conical cornea are more readily determined by instruments with mires wholly or partially circular (as Chambers, Inskeep & Co. and Reid) as the irregularity is more observable. In most instruments the mires are movable, one or both, necessitating fixity of the prisms. With fixed mires the angle of reflection from

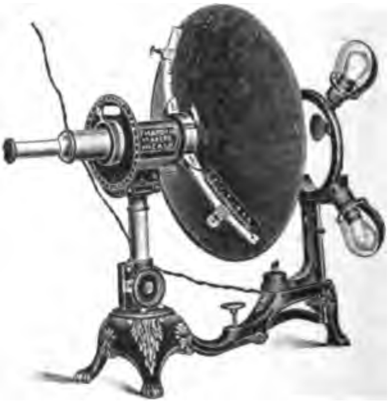


Fig. 5.—Rear of Hardy's Ophthalmometer.

mire to cornea is always the same, whilst with movable mires the angle varies with each movement of the mire and thus a slight error introduced. With the fixed mires the position of their reflection on the cornea is adjusted by movement of the prisms, as in the Chambers Inskeep model.

The relative position of the black or white lines bisecting the mires gives us our clue to the angle of astigmatism. When the mires show the corneal curve to be greater or less than the average (7.8 mill. radius) it carries a presumption that a minus or plus lens will be required to correct it. An eye with a corneal curve less than the average (longer radius) will give images separated and possibly indicate hyperopia. In an eye whose cornea has a greater curvature the images will overlap, and the amount of overlapping will give a presumption of the amount of myopia. This is more readily discernible by triangular shaped mires, but such readings are not to be relied upon as a guide to axial ametropia. Reid's portable opthalmometer is not so old or so well known as the Javal Schiötz instrument. Its optical principle is the same as that of Javal's. It measures the curvature of the central area of the cornea which reflects a double image of an object when

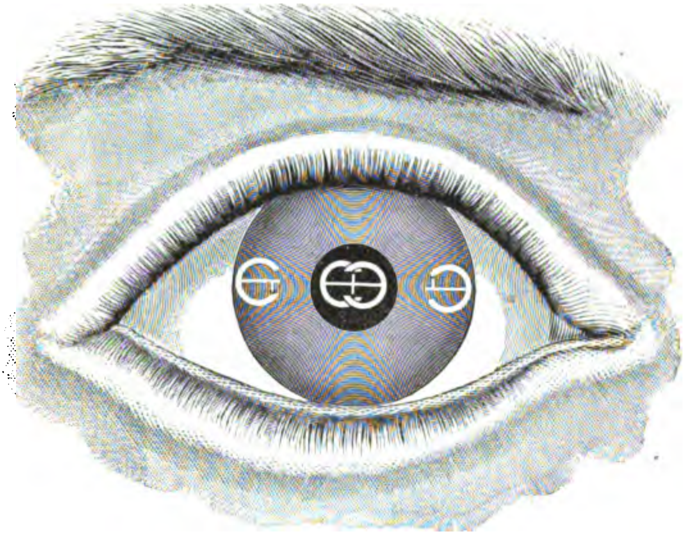


Fig. 6.—Reflection of Mires (Chambers, Inskeep & Co's. Ophthalmometer.)

the instrument is held in proper position with respect to the eye and source of light, and these images are much magnified by means of a telescopic arrangement. For a better comprehension of the instrument, let me briefly refer to a few points in its construction. The doubling of the objects is effected, as in the Javal instrument, by means of a double image prism inserted between two achromatic lenses of equal focus so that whilst the object is made to vary the image is constant. The object is a circular disc of ground glass marked with radiating lines and can be made to vary in size by a Zeiss iris diaphragm whose movements are easily regulated by a ratchet device and its size indicated by an index on a vernier marked in mms. and diopters. The corneal images can thus be rotated through all their meridians and by the overlapping or separation at any point of the rotation will indicate the presence of corneal astigmatism, the amount being registered in diopters on the vernier. Its seeming disadvan-

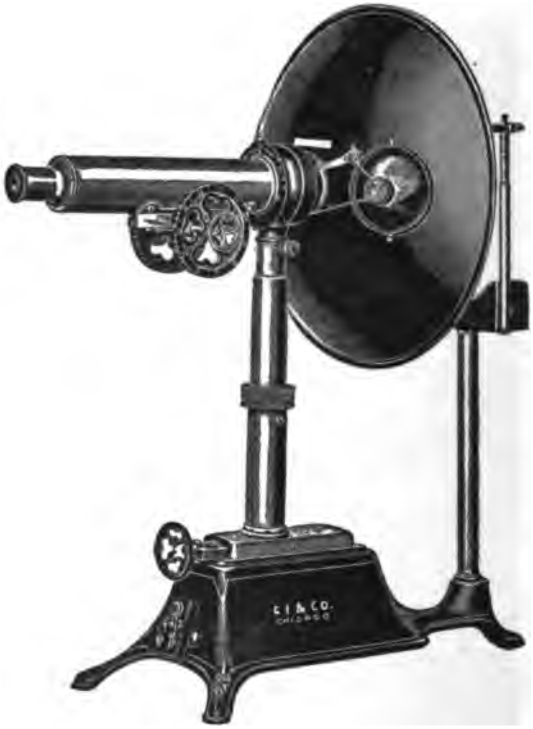
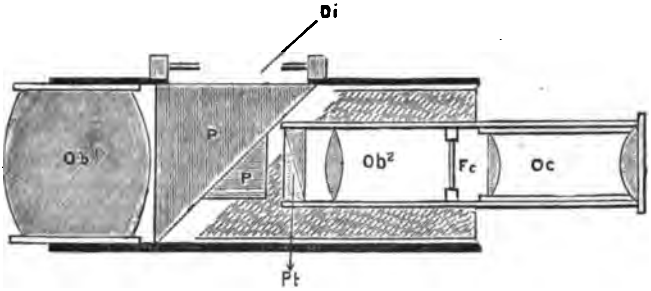


Fig. 7.—Chambers, Inskeep & Co's. Ophthalmometer.

tages are largely due to the difficulties at first experienced in its manipulation, the operator having difficulty in keeping the instrument steady and getting a proper focus or distinct image; these quickly disappear by practice. The instrument is steadied by resting the little finger of the hand holding it upon the brow of the patient and by a to and fro movement the focus is obtained, the disc being directed to some light and the patient directed to look at the centre of the disc whilst the observer views the double image through the telescope, taking measurements in the primary and secondary positions. Its advantages as combared to the Javal models are its convenience, being portable, 4 in. long, light, weighing 6 oz., can be used anywhere, in any position of the patient, standing, sitting or lying down; with very moderate light, natural or artificial, the objective of the instrument acting as a condenser. Any irregularity of the cornea is readily recognized by the ir-



**O b', Objective of Ophthalmometer; P and P, the Prisms; D i. diaphragm with ground glass surface.**

**TELESCOPIC PART.**

**P b, double image prism, O b$^2$, Objective; F c, cross wires; O c, eye-piece.**

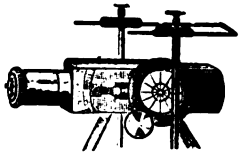


Fig. 8.—Reid's Ophthalmometer.

regularity in shape of the image. In regular astigmatism the images become oval shaped, depending upon the amount of astigmatism. The major or minor axes of the ovals indicate the meridians of smallest and greatest curvature and their relative positions indicate whether the corneal astigmatism is with the rule or against it, or oblique with an approximation to the angle. Irregular astigmatism is indicated by an irregular distortion of the circular image. In conical cornea the image is small and irregular. The instrument will not measure the centre of the cornea in such cases but some guide to a correction may be obtained by noticing the change in shape of images. The accuracy of the instrument is worthy of consideration; a difference of .25 or .50 D is readily appreciated by the elliptical form of the images. The circular form of the images with their clearness and brilliancy of illumination makes their contact or slightest overlapping or separation readily noticeable. In high degree of astigmatism, say above 3.5 D, the instrument usually measures less than the actual, due to spherical aberration, to overcome which a smaller image is necessary and we must substitute a 1.5 mm. double image prism for the 2 mm.

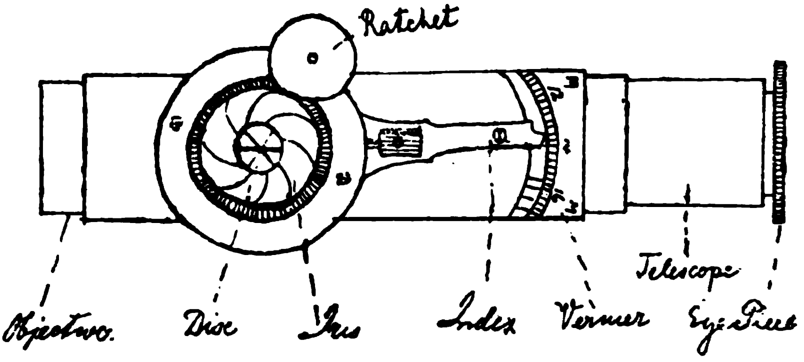


Fig. 9.—Diagram of Reid's Ophthalmometer.

In conclusion permit me to summarize the value of instruments used for keratometry, as follows:

1st. That cylindric correction should never be made from the ophthalmometric findings, unless carefully proven by other and much more reliable tests, as with skiascopy or trial lenses and test cards.

2nd. The ophthalmometric findings may be increased, decreased, or even neutralized by intraocular astigmatism.

3rd. That total astigmatism, as found by trial glasses, and the corneal error as registered by ophthalmometers, will vary from .75 to 1.5 D.

4th. That all keratometers give us, approximately, the amount and exact axis of corneal astigmatism, therfore they can be followed approximately as regards axis, and strength of the cylinder.

5th. It acts as a time-saver and enables us to proceed with certainty in the different steps of other tests, whether subjective or objective, by giving us a clue to the amount and angle of corneal astigmatism.

6th. In aphakia it is of special value, as the lenticular astigmatism is eliminated.

7th. When for any reason a mydriatic cannot be used, the ophthalmometer is a more reliable test for astigmatism than any other test.

8th. It will give us information regarding corneal astigmatism in corneal opacities or opacities of the vitreous when retinoscopy cannot be used.

9th. All keratometers in the market are valuable, one excelling the other in the matter of mechanical conveniences.

10th. That in the near future, owing to the rapid improvement in mechanical conveniences and scientific precision which the ophthalmometer is undergoing, it is quite probable that its findings will become as trustworthy as the skiascope and the subjective test.

11th. The amount and axis of astigmatism, and the amount of axial ametropia, is more speedily and accurately obtained by skiascopy than by any other method; and that accuracy in refraction requires in the majority of cases the use of a reliable cycloplegic.

# THE OPTICAL TREATMENT OF CONICAL CORNEA.

By Swan M. Burnett, M.D., Ph.D.

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With 3 Illustrations in the text.

By the term keratoconus, or conical cornea, we mean to indicate that condition of the cornea in which, without any antecedent or accompanying inflamation, it gradually changes its form without losing materially its transparency, assuming a shape more or less conical in character.

The cone, however, is not necessarily, nor indeed commonly, perfect. Yet there is nearly always some approach to regularity in the curve of the surface, and upon this regularity depends the success of treating the condition by optical means. In the pre-ophthalmometric period the nature of this curve could not be determined with any degree of accuracy, and whatever optical means were applied, resulted from purely empirical testing. The invention of the disc of concentric rings by Placido, some little time before the introduction of the ophthalmometer, aided much in the determination, but it is only by the ophthalmometer that we are able to make measurements that give us nearly reliable data for the solution of the problem.

By means of this instrument we are enabled to examine the curve at any particular part of the corneal surface, and not only fix upon that which is the more nearly regular, but more important still, find the direction of the meridians of greatest and least refraction; for, as we have been able to determine with anything like accuracy by this instrument alone, there is in nearly every case of keratoconus, at some time during its history, an amount of regular astigmatism the correction of which improves vision, often to a great degree. In fact, as a general rule, in my experience, it is this correction of the determined regular astigmatism alone that gives whatever amount of benefit we obtain by glasses.

I have not found the skiascope of any great value in the determination of the character of the general refraction, or in indicating the appropriate glasses for correction. This useful means in the diagnosis of refractive conditions can not be relied upon for accuracy, unless the refractory media are devoid of irregular refraction. This I pointed out in a paper entitled "Some Incidental Phenomena of the Shadow Test," read before the Amer. Oph. Soc. in 1892. In this I called attention to what I termed "internal shadows" resembling those found in true conical cornea, but which I found upon careful keratometric measurements were not due to any irregularity of the corneal curve or lens changes.

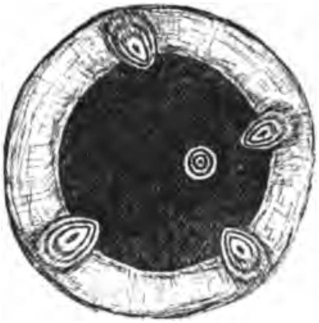

Fig. 1.—Corneal Refraction of Placido's Disc in a Typical Case of Keratoconus.

This appearance in an apparently perfectly normal eye, and which is quite as common as the "scissors movement," does not seem to have been considered properly in any of the treatises or chapters on the shadow test with which I am acquainted. Their consideration of the forms and changes in the shadows in irregular astigmatism do not seem to me to be applicable here; certainly not for the average observer. I have not seen a single case in which this phenomenon was at all marked that did not give a refraction as determined by the shadow test different, and usually higher, than that found by the test lenses.

No little patience is sometimes required in working out the form of the curves and measuring the curvature of the sides of greatest and least refraction by means of the ophthalmometer. The apex of the curve is not always found at the centre of the cornea, and as the refraction shifts with each movement of the eye, sometime may be consumed in locating it and the direction of the axis of the curvatures of the principal meridians. Much assistance in these particulars is rendered at the beginning of the examination by Placido's disc which is attached to the Javal ophthalmometer. I will state here that the one which forms a part of Javal's original model is by far the best. I usually observe and record diagrammatically the general slope of the disc at the apex of the curve and then successively at the base at either end of the principal meridians, which can be roughly estimated by the direction of the apices of the cone-like forms of the figures which are formed there. See Fig 1.

This rough estimate of the direction of the meridians is then refined by means of the ophthalmometer and the curvatures measured. These measurements, however, are not of material assistance in the further working out of the correction, except as to the astigmatism. and even here there is often a want of harmony in the two findings. It has been generally assumed that, on account of the high refraction at the apex of the cone, the general refractive condition in keratoconus is myopic. As a matter of fact, however, in the majority of cases that have been examined by me the general myopia, when present, has not been high, and in a goodly number, about 40 per cent. of the whole, there was a hypermetropic astigmatism in at least one meridian. In the hypermetropic cases we must assume that it is not the light coming through the apex that is used, but only that coming through the sides of the cone which have a hyperopic refraction. In making examinations with glasses, therefore, it is not wise to rely too implicitly upon the ophthalmometric measurements of the apex as a guide, but to try patiently to find the combination of lenses that gives the best vision. The fan of Snellen and spherical glasses are often very helpful in working out each meridian separately. Not only do we find that the two meridians may have opposite refractive states, but I have met but one case in which the opposite halves of the same meridian had opposite refraction, a condition which, unsuspected, might give rise to very conflicting results at different examinations. As this is unique in my experience and reading, I give a short history of it, Dr. J. M. P., my classmate in school and room-mate at medical college, was not aware that there was any special difficulty in vision until he was more than 30 years of age. Certainly during his college career, when I was his constant companion, he made no complaint. During the last few years, since he became presbyopic, he has made efforts to fit himself with glasses, but with no satisfying success. He visited me some four years ago and asked that I make a thorough examination of his optical condition. R; $V={}^{5}/_{24}$; with $+ 1.75 \subset + 0.75$ 165$={}^{5}/_{6}+$. In L $V={}^{5}/_{60}$. The ophthalmometer showed an irregular refraction of the cornea in the left eye which was peculiar, and upon further investigation was found to be as follows: The keratoscopic images of Placido's disc, as shown in Fig.

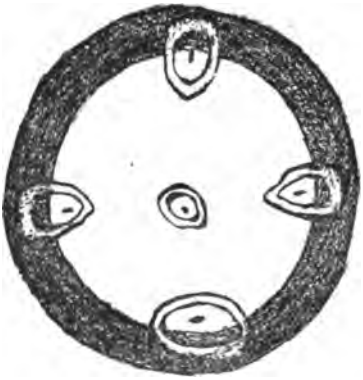

Fig. 2.—Appearance of the Corneal Reflection of Placido's Disc in the Case of Dr. J. W. P.

2. It will be observed that the central image is somewhat oval and slightly diagonal to the horizontal meridian. The temporal and nasal figures are irregular pointed cones, as we usually find them in keratoconus, and so is the image on the upper half of the cornea. The image in the lower half, however, is a horizontal oval indicating that the refraction is greater in the vertical than in the horizontal meridian. An ophthalmometric measurement was then made at 15° or 20° from the appex, along the vertical and horizontal planes, with the following result: Horizontal plane (or approximately) centre 46D, nasal 36D, temporal 43D; vertical plane, center 57D, upward 33D, downward 58D. As a matter of comparison I give the measurements

of the other cornea which has only a small amount of astigmatism: Horizontal center $41^1/_2$D, temporal 38D, nasal 37D; vertical centre 43D, upward 41D, downward 39D. This latter corresponds fairly well with what I have found in the average normal optical eye (1).*

In the vertical meridian, therefore, we have a hypermetropia in the upper half and a myopia in the lower half, with a difference at the selected localities of 15D. This would only come from an unusual flattening of the cone above and an unusual bulging below. Fig. 3 will give an idea of the form of a vertical section of the cornea as compared with that of a typical cone, which is represented by the dotted line. The discovery of this form of the corneal surface explained a very curious phenomenon in his vision which he, too, observed in his long series of self-examinations, which was that he could see equally well with a + 8 and a—8 spherical lens according as he inclined his head slightly up or down in looking at the test object. On testing, we found that when the head or eye was turned down and the light passed through the upper or flatter surface it was the + glass that improved, and when it passed through the lower or more curved surface with the eye or head were elevated it was the — lens which gave the best vision. With +2.25 ⊂ +6.75 10° his vision was increased from $^5/_{60}$ to $^5/_{12}$, and with the added lens for presbyopia he read No. 1 at 18 inches.

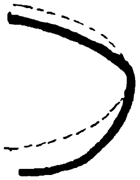

Fig. 3.—Diagrammatic Representation of a Vertical Section of the Corneaof Dr. J. W. P. Shown in the Heavy Line; the Dotted Line Representing a Typical Keratoconus.

Sometimes, however, myopia is the prevailing optical condition. I have seen one such case, where, after the operation of burning the apex of the cornea with the actual cautery, the cone assumed an almost regular form at the apex with a refraction, as measured by the opthalmometer, of about 60D. With the stenopaic slit and a — 16, vision was increased from counting figures at 3 feet to $^5/_{25}$ nearly. Before the operation no optical appliances had improved vision materially. As result of the cauterization, which involved the whole thickness of the cornea, there was only a slight diffuse opacity.

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*Analysis of the refraction of 576 healthy human beings.—Trans. Amer. Oph., Sec. 1888.

Of the hyperbolic lenses of Raehlman I have only to say that in my hands they have not been satisfactory in practice. There can be no question that as long as the visual axis corresponds to the apex of the curvature of the lens vision is improved and in some cases very pronouncedly so, but immediately this relation is changed, as it constantly is, in the ordinary use of the eyes, vision is made worse for the reason that the curved surface of the lens no longer corresponds to the faulty curvature of the cornea it is supposed to correct. The same holds true of the conical lenses recommended by Angelucci and others. I find that patients who have them seldom make use of them.

In the application of contact lenses recommend by Fick and Kalt, but suggested many years ago by Hershell, and since modified by others I have had no personal experience. Theoretically of course the suggestion is a good one, and in the physiological laboratory allowable, but it seems to me too hazardous for practical application and they cannot come into anything like general use.

A good deal can be said in favor of the stenopaeic apparatus under some of its forms. The simple hole or slit combined or not with a correcting glass often makes a wonderful change for the better in the visual power, as judged by the test letters. But it has the defects of its virtues as has many another thing good in its way. While cutting off the light that is confusing by its diffraction, it does not leave sufficient light for satisfactory vision, and the field is narrowed to a very annoying degree. The suggestion recently made by Snellen, I believe, of having the opaque disc perforated with a number of holes somewhat on the order of a pepper box top obviates some of these disadvantages, particularly when the lines of holes are made to correspond to the meridians of least and greatest refraction and are supplemented by the correcting glass. One great objection to the stenopaeic apparatus, however, is from a cosmetic standpoint. Women, who, by statistics, are more prone to keratoconus than men, object to the unsightliness of the black disc in any of its forms. Then there are those who seem to be indifferent to even the considerable improvement glasses can give them, and prefer the bad vision without glasses or other optical appliance, to the annoyance of wearing spectacles in any form.

Under the heading of "optical treatment," I presume, might fall a consideration of iridectomy or iriodesis for the purpose of transferring the pupil to a more regularly curved part of the cornea and altering its slope so that it shall conform more nearly to the best refracting meridian. The ophthalmometer is valuable, in fact an indispensible agent in the selection of the locality for the new pupil. The same might be said of tatooing the apex of the cornea in order to cut off the rays passing through it, particularly when it has become, as it often does, more or less opaque. This, however, would be trenching on the ground of those who are to deal with the operative treatment of keratoconus and I shall leave a full consideration of these features of treatment to them.

# ESTIMATION OF THE AMOUNT OF INJURY TO THE EARNING CAPACITY OF THE INDIVIDUAL FROM PARTIAL OR COMPLETE LOSS OF VISION.

BY HOWARD F. HANSELL, A. M., M. D.,

PHILADELPHIA, PA.

The problems in sociology, suggested by the title, are numerous, important and difficult of solution. The earning capacity of an individual is the effective result of the complex combination of physical and mental qualities, special senses, education, training and experience. In this complexity the value of any one special sense or organ or mental quality cannot be reckoned. As well try to put value upon each part of a steam engine. Complete, the engine is worth $10,000; its parts when isolated are worth their weight in old iron. The impossibility of according to each organ an individual and specific value has been, to the practical sociologist, an insurmountable obstacle to the creation of any one standard by which the majority of wage earners may be classified in respect to incapacity by reason of personal damages. Again, the subject is complicated on account of the endless variety of professions, trades and occupations that go to make up the sum of the world's business. No dogmatic statement or law that could be applicable to more than a small class or would be inclusive of more than one trade or profession, can be formulated. The attempt of Zehender to reduce the proposition to an algebraic formula cannot be called a success since its publication provoked a series of papers by other German writers who declared that his premises were incorrect and his conclusions illogical. English and American authors are silent. I have been unable to find a single article in English that contributes useful information. Therefore I am compelled to fall back upon my own experience and to cull from the German literature the little that is available for my material.

I am under obligations to the accommodating assistant secretaries of several accident insurance companies, namely the Ætna, The Travelers, The Fidelity and Casualty and the Preferred Mutual, for their courteous replies to what they are pleased to term my "conundrums" asking for their methods of estimating the amount of losses for impaired vision, and even here where one might logically expect to find suitable data, I have found the soil barren. Their estimates are based upon the proportion of eye injuries to those of other portions of the body, upon the ratio of losses to the whole number of insured, and upon the amount of premium the insured is willing to pay in ordinary risks. In other words, the general principle of insurance is the foundation for the incurring and the settlement of eye cases. For example: "When the loss or partial loss of vision totally disables the insured from performing all his duties, total disability is paid. When it disables him from performing some one or more of the duties of his occupation, partial disability is paid. This ruling naturally holds in cases of disability from other than ocular causes" (Preferred Mutual). The Travelers Co. replied, "There is no general method of estimating the pecuniary disability in cases of partial loss of vision, for several reasons. One will suffice. No accident policy ever written has undertaken to estimate such disability. On the contrary the insurance contract is either a valued policy, fixing a definite sum in the event of loss of vision in one or both eyes, or it names a definite sum to be paid as weekly indemnity for total or partial loss of time resulting from eye injuries." The Ætna replied, "The method of estimating pecuniary indemnity in cases of partial or complete loss of vision from accident depends upon the form of policy which the injured has purchased. If his occupation is such as to entitle him to insurance in the select or preferred class the indemnity payable for total loss of sight of both eyes would be equal to the full amount of his insurance, being therefore placed upon the same basis as a fatal accident. The loss of the entire sight of one eye is compensated for by the payment of one-eighth the amount that would be paid for the loss of both eyes. If the loss of sight is partial (temporary) and its temporary loss results in the insured being unable to perform the duties of his occupation, he is indemnified for such loss of time simply, just as though he were injured in any other organ. As to loss of vision from disease: under our special health policy provision is made that in such an event an amount equal to 100 weeks indemnity for total disability will be payable. Payments made by insurance companies for such loss were originally arbitrarily fixed and the experience of the companies has not been of such a nature as to make it necessary to modify the same materially."

The insurance companies have no uniform methods of estimating the value to an individual of one eye or of both eyes but by agreement between themselves and the insured assume the risk of being called upon to pay sums varying from $600.00 to $1000.00 for one, and $5000.00 for both eyes provided the injured has paid a certain yearly sum. The amount is determined by the ratio of eye injuries to injuries to other parts of the body and to fatal injuries, taken from a large number, and the willingness of the insured to pay a yearly premium commensurate with his own conception of the pecuniary value of an eye and of vision and of the risk he believes he incurs. This is a purely mutual and financial arrangement and is made independently of age, sex, occupation (excluding special risks) and annual income.

The United States Bureau of Pensions has fixed the rates of pension for disability arising from disease of the eyes thus: Total blindness of both eyes $72.00 per month; loss of one eye $17.00 per mo.; loss of sight of one eye $12.00 per mo. In cases of disease of eyes causing defective vision, the rates of pension vary from $6.00 to $50.00 according to rank and pay.

The eyes, their appendages and the cerebral visual centers in their association and co-ordination with the mental and physical qualities and endurance of the individual constitute his earning powers. The loss he sustains by impairment of vision is in proportion to the demands of any special occupation or the retention of the ability to acquire a new one, to the financial returns for a day's or a year's labor, to the age of the individual at the time the loss is incurred and to its effect in fixing his future status as a member of society. Moreover, the eyes have an idealized and sentimental value. An intelligent and thoughtful person who gives credit to each organ for the part it plays in contributing to the success and happiness of his life counts his sight as priceless. If asked to name the value even of one eye he would answer that it is beyond computation. But sentimentality does not enter into the calculations of insurance companies, railroad corporations or the government and the value it imposes has no practical bearing on the loss of one's earning capacity.

Blindness is defined scientifically as the entire loss of light perception; practically, the loss of the ability to count fingers or to distinguish large objects at a distance of $^1/_3$ meter. When defined in respect to oarning capacity, blindness is the loss of vision neccessary to gain one's livelihood at any occupation whatever. That man is blind who from accident or disease can no longer see to follow his previous occupation or acquire another by which he can support himself.

The acuity of vision as expressed by the familiar letters of Snellen is not a safe criterion of the practical value of sight when applied to the earning capacity of individuals in most kinds of labor. For example, the railroad engineer should have $^{20}/_{20}$, the student *may* have $^{20}/_{100}$ and earn as much as though he had $^{20}/_{20}$. But let the vision of any one fall below the amount demanded by his occupation and his earning power decreases in proportion. A distinction should be drawn between the acuity of vision for far and that for near since each separately enters into both the selection of an occupation and into the damages to the earning power from impairment of one or the other respectively. The loss of accommodation in some occupations without the loss of distant acuity is enough to disqualify and vice versa. Usually, however, accident or disease that involves one includes the other.

Partial and Complete Blindness of *one* eye.

The degree of loss of the earning power in complete monocular blindness has been exaggerated and is sentimental rather than real. Zehender is correct in saying that in all trades except a few, all men with one eye are as capable as those with two, and the one-eyed man's one eye is worth both eyes of the two-eyed. Indeed, the possession of both eyes is sometimes a disadvantage in that it is absolutely prohibitive of the pursuit of certain occupations. For example, muscular imbalance is sufficiently common and its symptoms sufficiently grave to prevent many youths from entering a business or profession that demands for its perfect performance prolonged binocular fixation or to handicap those so engaged. Diplopia from paralysis of an ocular muscle limits the earning power more than would the loss of an eye. Again, imperfect vision of one eye will, until the individual learns to disregard the blurred retinal image of that eye, interfere with the use and enjoyment of the other. But there are few occupations in which the associated function of the two eyes is indispensable because of the necessity for the binocular field, such as the army and navy service, locomotive engineering, signaling, etc. The one-eyed man is inferior to the two-eyed in three respects, namely, limitation of the field of vision, danger of total blindness from loss of the remaining eye from accident or disease (sympathetic inflammation) and in the choice of an occupation. With these unimportant exceptions that may be estimated at 5 per cent. of his earning power we conclude that the one-eyed man is as well qualified for duty as the two-eyed. One of the most distinguished educators of this country has prepared himself for his high position by years of constant study and is in no way disqualified, practically, by monocular blindness. He has by the force of his intellect, overcome whatever objections that may have been urged against his fitness. Another illustration that is not uncommon is that of the bread-winner who has regained, after a succesful operation on one eye, his position and wages that had been lost by incapacity through advancing cataracts.

On the other hand, *partial* loss of vision of one eye is not an insignificant interference to the full and satisfactory performance of the duties of many trades, estimated by Ottinger at 6 per cent., by Magnus 15 per cent., Jatzow 30 to 35 per cent., by Zehender 33 per cent. and Josten 30 per cent. loss of the earningpower.

The loss of the left eye from accident is 20 per cent. more frequent than the loss of the right, according to Ottinger, principally because the majority of men are right-handed and in their work drive particles of steel, iron, etc., to the left, and because the right arm is quicker to ward off blows than the left. My own experience does not confirm this statement. Among a number of accidents in which foreign bodies have entered the eye, the right was invaded quite as frequently as the left. Hence the eyes are equal in value and the right not, as is claimed, more valuable than the left.

The interference with the earning power when one eye is blind and the other weak is in direct proportion to the loss of vision in the weak (seeing) eye, as the following computations from Magnus and Zehender shows:

| V. | Magnus. | Zehender. |
|---|---|---|
| 0.7 | 37 per cent | 41 per cent of loss of E. P. |
| .6 | 51 " | 50 " " " |
| .5 | 63 " | 59 " " " |
| .4 | 75 " | 66 " " " |
| .3 | 86 " | 75 " " " |
| .2 | 96 " | 84 " " " |
| .1 | 100 " | 91 " " " |

In what grade of loss of vision does the earning power begin to decrease? Josten's statement that vision must be reduced by one-half may be accepted with modifications. In the U. S. military service there is nominally a uniform standard of vision demanded of recruits, but I have been informed that the requirements vary (1) according to the particular branch of service the recruit wishes to enter, and (2) according to the demand and supply of new men. The standard varies also in railroad service. Men engaged in the actual running of trains must have full acuity of one eye and two-thirds of the other, and quick and accurate color perception, while men employed about the yards, stations and offices are admitted after less strict examination or none at all. Nor have I been able to learn that in the great shops where the aggregate of men and women employed is large that any other standard is exacted than ability to perform the duties of the various positions, the care of the sick and wounded being given over entirely to beneficial mutual aid societies and to individual responsibilities.

The requirements of vision depend upon the nature of the occupation, and the amount of reimbursement should depend upon the loss of visual power and upon the wages earned during full competency. No other just method of estimating the injury to the earning power in partial or complete loss of vision than that based upon the returns before and after injury is practicable. The amount of indemnity to be paid by insurance companies and the amount of premium to be paid by the insured should be in accordance with a definite schedule graduated to apply to bread-winners of all ages and all occupations whose vision may be damaged or ruined through either disease or accident. Starting with the qualification that must be generally recognized, that the partial loss of vision must exceed a certain amount before one's earning capacity is reduced, such a table might be prepared for general adoption. The table would apply to those individuals whose eyes were damaged beyond reparation regardless of the nature of the impediment of sight, or whether the cause was congenital or acquired. The following scale is offered:

| Vision. | Loss of earning capacity. |
|---|---|
| 30/60 | 1/5 or 20 per cent. |
| 20/80 | 1/3 " 33 " |
| 20/100 | 1/2 " 50 " |
| 20/150 | 2/3 " 66 " |
| 20/209 | 4/5 " 80 " |
| 5/200 | 4/7.5" 95 " |
| Counting fingers 1/3 m. | 5/5 " 100 " |

We may assume with propriety that a man will double his earnings every 10 years, provided his mental and physical health is preserved, and that he has average intelligence, industry and ambition. We may assume with equal propriety that when his earning power falls below 66 per cent. of the average earning capacity, that promotion with increase of income cannot be reckoned, and that when 80 per cent of the visual power is lost, he is no longer in position to earn the income that was his before, and therefore he falls back, not only in receiving no increase, but in losing that he already made, if the loss occurred after he entered the ranks as a bread-winner.

| V=20/22 age | $5 per week | V 20/60 loss 20 per ct. | V 20/80 loss 33 per ct. | V 20/100 loss 50 per ct. | V 20/150 loss 66 per ct. | V 20/200 loss 80 per ct. |
|---|---|---|---|---|---|---|
| 15-25 | $ 250 pr.yr. | $ 200 p. y. | $ 166 p. y. | $125 p. y. | $ 83 p. y. | $50 p. y. |
| 26-35 | 500 " | 400 " | 333 " | 250 " | 166 " | 50 " |
| 36-45 | 1000 " | 800 " | 666 " | 500 " | 333 " | 50 " |
| 46-55 | 2000 " | 1600 " | 1334 " | 1000 " | 1000 " | 50 " |
| 56-65 | 4000 " | 3200 " | 2667 " | 2000 " | 1334 " | 50 " |

When vision is reduced to counting fingers at $^1/_3$ m. the loss is 100 per cent and the individual not only earns nothing but is a charge upon his family or upon the community. It is assumed in this computation that the impairment of vision is irremediable and applicable for all distances. Only one example is taken, but if the principle which is founded upon my reading and experience, although somewhat arbitrarily figured, is correct for one, it will apply to the great majority and seems a fair, reasonable and practical method of estimating the pecuniary loss to the individual capable of earning specific amounts at any age during the five decades of active life. It is applicable to most business and professional men but in the case of laborers and artisans who receive no promotion after having attained a certain grade, it must be modified in respect to the doubling of wages or income every tenth year. This permits of a decided simplification of the computation. Thus if a man earns $20.00 per week and will continue to earn that amount during the remainder of his working years his loss will depend upon the age at which the incapacity begins and its degree. Thus, at 25 years he would have had 30 more years of work at $1000.00 per year. His earning power according to the table could be computed thus: V. reduced to $^{20}/_{60}$ equals 20 per cent of loss, equals $200.00 and the earning power is $800.00 or if V. be reduced to $^{20}/_{150}$, 66 per cent of loss, equals $666.00 and he earns $334.00 per year; and thus for any year or any degree of loss. Exceptions and modifications of the table should also be made in the case of girls and women since their working years are fewer and they are much less subject to increase of earnings on account of the comparatively few occupations open to them. Many, perhaps the majority, are employed in shops, mills and offices and in such positions that increase of skill and experience are not rewarded by increase of incomes or increased earning power.

Common diseases of the eyes of local origin that impair the earning power:

Acute inflammation of lids and conjunctiva being transitory seldom leads to more than transient disability. The visual power is decreased in proportion to their intensity. By reason of pain, swelling, photophobia and discharge, the patient has no earning power during their continuance.

Chronic blepharitis and conjunctivitis without actually lowering the acuity of vision, prohibit sustained near use and cut down the number of daily working hours and proportionately the income.

Acute inflammation of the cornea of one or both eyes totally disables.

Chronic inflammation of the cornea of one or both eyes totally disables.

Opacities of the cornea of one eye reduce the earning power not more than 20 per cent.

Opacities of the cornea in both eyes reduce the earning power according to the visual acuity (see table).

Acute iritis of one or both eyes totally disables for periods of six weeks or longer.

Chronic iritis with posterior synechiae reduces earning capacity 50 per cent.

Incipient cataract of one eye, no reduction.

Advancing cataract of both eyes reduces according to the acuity of vision remaining and is subject to continuoùs retrogression (see table).

Complete cataract in both eyes totally disables but after successful operation on one eye the case is relegated to the category of refractive cases. The earning power is restored according to the vision regained for far and near. A patient operated upon last fall may be cited in illustration of this point. He stated that his earning power had been gradually reduced from $18.00 per week to nothing. For six months after cataract extraction his vision had equaled $^{20}/_{100}$ and he had earned $9.00—50 per cent loss. Lately he has V. $^{20}/_{15}$ with a new correction and has been able to command his old wages.

Vitreous opacities of one eye do not decrease the earning power unless due to the presence of a foreign body causing irritation and photophobia with danger of sympathetic ophthalmia.

Vitreous opacities of both eyes decrease the earning power according to the table, plus the liability to total loss which may be estimated at 50 per cent more.

Detachment of the retina spontaneously or in myopia of one eye may be reckoned as total loss of that eye plus the probability in the latter of total loss and total disability.

In my experience spontaneous or idiopathic detachment of the retina of one eye is rarely followed by a similar affection in the other, hence the probability of total loss is less. The contrary pertains, however, where it follows as a consequence of scleral stretching and choroidal atrophy of myopia, when the earning power is seriously menaced. The choice of occupation is rendered difficult since those demanding prolonged near use of the eyes and straining and stooping positions must be declined.

Other diseases of the retina, the result of purely local causes and limited to one eye do not decrease the earning power.

Double central retino-choroiditis reduces the earning power to that of the average laborer although the periphery of the fields may be intact. Exceptions must be made when the earning power depends upon intellectual rather than ocular acuteness.

Constitutional, acquired, or hereditary ocular disease, such as albuminuric retinitis, retinitis pigmentosa, tubercular choroiditis, syphilitic affections of the cornea, iris, vitreous and fundus tissues, optic nerve atrophy, progressively reduce the earning power in direct proportion to the oss of vision until the patient's death or total disability.

Congenital color blindness debars the individual from army, navy and railroad service, but from few practical pursuits and only by limiting the selection of occupation tdoes it interfere with his earning power. The estimate of he degree is purely arbitrary, but probably does not exceed 1 per cent.

Magnus computed the loss of earning power from peripheral limitation of the fields thus:

Loss of 30 degrees - - no loss of e. p.
" 40 " - - 20 per cent loss of e.p.
" 60 " - - - 45 " " e. p.

Peripheral limitation of one field only entails loss of e. p. of 10 per cent.

In homonymous hemianopsia, loss 30 per cent.
In bitemporal " " 20 "
In binasal " " 0 "

Diplopia from monocular paralysis irremediable by prisms but removed by occlusion of one eye brings the patient into the category of the one-eyed, but since a variable amount of time must elapse before the individual is able to resume his previous occupation and to regain his old skill, he suffers a loss during this time of his earning capacity of 50 per cent.

Paralysis of associated movements and double complete ophthalmia externa completely disable.

Errors of refraction deserve but scant attention in this paper since they are for the most part remediable and the individual is subjected to the annoyance only of his dependence on spectacles for the full use of his eyes with good vision. This is an inconvenience, but does not decrease the earning power except as applied to a few occupations. In the absence of disease, persons with any kind of regular defects, can be restored to full earning power. With incorrectable accommodative and muscular trouble by which an individual is incapacitated from the full use of his eyes, the loss of earning power will equal the number of hours daily that he is unable to work and may be estimated at 50 per cent of his full capacity.

Foreign bodies in the interior of the eye totally incapacitate for a variable number of weeks and are in the great majority (Cohen 144 cases, only one eye saved) followed by the loss of the eye. If removed before the stage of chronic irritation sets in and the danger of sympathetic ophthalmia is not present, the individual goes into the list of the one-eyed. If allowed to remain, the earning power is lessened 25 per cent and in many cases finally 100 per cent.

Foreign bodies in the cornea are readily removed without permanent cicatrices. Before extraction the earning power is reduced 100 per cent. The sudden loss of one eye incapacitates to greater degree for a time than the gradual loss, because the individual loses all judgment of space and he requires time to learn anew the relation of objects to each other and their size and shape since the mental conceptions are changed. Among the trades that require the higher grades of vision the damage to the earning power in the gradual loss of one eye is 22 per cent, in the lower 18 per cent. Zehender says that after the loss of one eye only two-thirds of the earning capacity remains. Mooren adds to this the loss of binocular vision, 8 to 16 per cent according to the danger of the occupation.

My conclusion may be briefly stated thus:

Blindness is that degree of loss of vision that incapacitates one from earning his living in any occupation requiring the use of the sense of sight, the degree varying according to the demands of the occupation.

Vision of less than one-half diminishes the earning power and the less the vision the greater the loss of earning power.

Monocular blindness is not incompatible with full earning capacity.

Monocular blindness and weak sight in the remaining eye rapidly diminish the earning power.

The loss of earning power owing to defective vision may be computed according to a simple system based upon the ratio of the loss of vision to the full earning capacity at any age and in most occupations.

# AN UNCOMMON DISEASE OF THE CORNEA.* (KERATITIS EPITHELIALIS HYPERTROPHICA.)

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Not long ago I presented an unusual case before the San Francisco Society of Eye, Ear, Nose and Throat Surgeons. The case seemed rare to all those present. In looking up the literature upon the subject I find no reference to just such a condition as is found in this case, viz., a diffuse epithelial deposit upon the cornea. That of both eyes is affected.

HISTORY.—The patient is a German, 33 years of age, good general health, weight and nutrition good, and has no specific history. There is nothing in the family history to indicate any special dyscrasia. He has worked in a smelter nearly all his life where he has been exposed to much dust and irritating fumes. His eyes have been affected much as they are now for 12 years. He has not been able to use the right eye for 10 years, but it is only during the last few months that the left eye, though considerably affected all the time, has become so bad that it interferes with his work.

PRESENT CONDITION.—Vision of right eye is for moving objects only. Vision of left eye 20/80. There is a slight amount of photophobia. No excess of secretion. The palpebral conjunctiva is perhaps a little hyperemic, but otherwise appears perfectly normal. There is nothing about it to indicate that it has been otherwise at any time. Certainly no indication of his having had a trachoma in the past. The ocular conjunctiva is but slightly hyperemic, otherwise appears quite normal, up to the margin of the cornea. Upon the cornea is a diffuse epithelial deposit covering almost the entire cornea of the right eye but thickest near the center where it appears very uneven—in some places lumpy—which is readily detected by passing a probe over it. The cornea is quite insensitive wherever covered by the deposit. In several places there appear small epithelial tufts 1 or 2 mm. in thickness. The deposit is thinnest around the periphery of the cornea, and one can see blood vessels here and there supplying it from the scleral border. Although the epithelial deposit is quite diffuse over both corneae there are a few isolated spots of perfectly clear cornea, perhaps the size of a pin head. In many places the deposit appeared to spring from the scleral border and extend toward the center though it is much thinner around the corneal margin than over the center of the cornea. In some instances only a narrow ridge of epithelium, 2 or 3 lines in width and very thin, leads from the corneal border to a thick tuft two or three times the size of a pin's head. These tufts appear woolly. It seems a proliferation of the epithelial layer of the cornea proper, as the condition is not present anywhere in the conjunctiva. Around the periphery of the cornea where the deposit is thinnest, it appears flat and almost transparent. This is especially the case over the margins covered by the lids. Over the cornea exposed by the palpebral fissure the deposit is thickest and is piled up into tufts. The condition has been about the same at all times of the year, the change of seasons not having modified it at all. A microscopical examination of a tuft showed it to consist almost entirely of proliferated epithelial cells.

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*This is believed to be the first time it has been described.

As the condition is confined almost entirely to the epithelial layer of the cornea and does not develop first in the conjunctiva and then spread upon the cornea, as it is not dependent upon low nutrition or any general dyscrasia so far as can be made out, is not influenced by the change of seasons, and is a disease occurring in the adult, I suggest as the name of this affection: Keratitis Epithelialis Hypertrophica.

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# ABSTRACTS FROM AMERICAN AND ENGLISH OPHTHALMIC LITERATURE.

BY

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## Quarter Ending September 30th, 1900.

### On Strictly Simple Evisceration of the Eyeball.

GIFFORD, H., Omaha, (*Arch. of Ophth.*, July, 1900.) What is generally called simple evisceration, the writer designates as an evisceration plus a keratectomy. For more than two years he has been doing a strictly simple evisceration, that is, instead of cutting out the cornea he has made a meridional incision either entirely within the sclera or extending partly or entirely across the cornea, and has completed the evisceration through the opening thus made without removing any of the cornea. The results have convinced him that this should be the operation of election. Thus far he has done fourteen simple eviscerations.

He describes the operation as follows: "A conjunctival flap was laid back by two incisions, one along the corneal margin from near the insertion of the external rectus to that of the superior rectus, the other extending from the lower extremity of the incision obliquely upward back to the retro-tarsal fold. A meridional incision $^3/_4$ inches long was then made through the sclera midway between the external and superior recti, extending from within 3 mm. of the corneal margin toward the posterior pole of the eye; the eye then being turned down, the contents of the globe were scraped out through this incision, which was held apart with hooks or forceps. The conjunctival flap was then replaced by two or three sutures, no scleral sutures being employed. The advantages of this operation are that, although the stump gradually diminished in size until the cornea is reduced to a mere facet, on the average a much larger stump is finally obtained than where an evisceration plus a keratotomy without the introduction of any foreign body is done. . . . Another advantage of the simple operation is the reduction of the conjunctival edema which is so frequently an unpleasant feature of the current operation. After the simple evisceration there is in most cases no chemosis worth mentioning. . . . The disadvantage is that it is more difficult to remove the contents thoroughly and to obtain a view of the interior than where the cornea is cut out." The author has obviated this difficulty in several cases by carrying the incision across the cornea through its centre or by making a scleral flap. In the latter case not only conjunctival but scleral sutures also were introduced. In three cases he has also tried the introduction of an artificial vitreous in combination with the simple evisceration, using in two instances a perforated bone shell and in the other a glass ball. The reaction was astonishingly slight, no edema, and almost no pain occurring. Nothing has been seen or heard of these foreign bodies so far, but none has been in longer than 6 months.

### The Treatment of Keratoconus with Galvano-Cautery.

KNAPP, HERMAN, New York, *(Journ. Am. Med. Ass'n.*, Aug. 18, 1900.) In 1892 Knapp published five cases of keratoconus (6 eyes) which he had treated with galvano-cautery. To these he now adds a second series of nine operations, the results of which are briefly reported. In all of the fifteen successive cases improvement in vision after correction with glasses was noted. In one case it rose from $^{1}/_{100}$ to $^{20}/_{70}$ and in several cases from $^{10}/_{200}$ or $^{20}/_{200}$ to $^{20}/_{70}$. The improvement in vision, however, is not the only gain; the great gain is the arrest of progress of the deformity and degeneration. In his attempts at relieving keratoconus the writer has not had to deplore the loss of a single eye.

When using galvano-cautery in keratoconus, Knapp endeavors to observe these two rules:

1. "Never cauterize too deeply, and if the result of the first operation be imperfect, apply the convex disc electrode again to the place in which you want the subsequent cicatricial contraction to have the greatest effect.

2. "Spare, if in any way possible, at least half of the pupillary area. If we operate early, even in restricting, as we should, our interference to the progressive cases, we have to deal with a clear cornea, the reaction will be least, and the visual result as well as the operative effect greatest."

### The Surgical Treatment of Conical Cornea.

SATTLER, RORERT, Cincinnati, (*Journal Am. Med. Ass'n.* Aug. 18, 1900.) The objects of surgical intervention in cases of conical cornea are: "1. To arrest an inexorable advance of a deformed central area of the cornea by converting this region—in part or altogether—into an opaque scar or a series of cicatricial lines, thereby affording a more or less effectual check to an otherwise hopeless progression. 2. To effect a betterment of vision in confirmed cases which have been rendered hopeless in consequence of a hopelessly reduced sight, after all other methods of treatment, including every kind and combination of lenses, stenopaic appliances, etc., have been discarded as useless."

The writer advises great caution in determining the indications for this surgical interference; he does not consider the indications clearly defined. Non-progressive cases in which, with or without the aid of glasses, moderately useful vision exists should not be operated upon. But even when there is evidence of progression, successive changes in glasses may suffice for the requirements of patients. Furthermore, it must be borne in mind that the progression may spontaneausly come to an end after a variable period of time, leaving the patient sufficient vision for most necessary practical needs. Another established clinical fact is that this progressive increase of the deformity is more rapid in one eye, causing hopeless reduction of sight, while in the fellow eye the same process terminates more fortunately in spontaneous arrest.

The writer emphasizes the uncertainties and the risks attendant upon the surgical methods in use, especially those which are concerned with the cornea. He has had several opportunities of observing that the central region of the conical cornea is particularly vulnerable to traumtism, whether operative or otherwise; and is followed by reaction out of proportion to the injury inflicted. For this reason the simplest surgical measures should be chosen, consisting of cautious cauterization and tattooing.

The writer summarizes the results of surgical experience and careful clinical studies of conical cornea, as follows: "That the surgical treatment of this uncommon deformity of the cornea is attended by uncertainty and danger even in the most favorable cases. Also, that it is without exception, tedious. If it is undertaken with the hope of improving vision by reducing the central ectasia through cicatricial contraction alone, it will prove in most cases an unsatisfactory venture.

The simplest and least risky surgical method consists in the discriminate and cautious use of the galvano-cautery, supplemented, if necessary, by an iridectomy, iridotomy or iridenkleisis.

Abscissions or excissions of the central ectatic region, repeated paracenteses, are one and all most uncertain in their final results. The most vicious resentment may follow the most cautious attempts of such surgical interference, and for this reason they should not be too hastily resorted to.

Experience with the more desperate cases suggests as the most rational plan of surgical interference: 1, the removal of the lens by discission or extraction; this is followed by superficial cauterization with the galvano-cautery and tattooing—simply to render the ectatic region opaque, but not with the hope or object of bringing about greater resistance on the part of this locality, or, what is less likely to occur, a better restoration of space and curvature of other parts of the cornea. This accomplished, it may be expedient to perform a small iridectomy, placed in the locality in which it may furnish the greatest possible good.

It must be remembered as an inviolable fact of surgical experience that the most carefully guarded traumatism to the deformed or central region of the cornea may be followed by fierce, and at times by fatal, reaction.

In conclusion, it may be stated that surgical treatment is justifiable in a certain number of cases, and while not often one of imperative necessity, may be one of practical expediency, which, however, only the judgment and experience of the surgeon must determine in every case.

### A Simple Operation for Divergent Strabismus.

Fox, L. W. Philadelphia, *(Journn. Amer. Med. Ass'n.* Aug. 25, 1900.) The operation described by the writer has been developed on lines laid down by de Wecker, Grandclement and Panas, but appeals to him as being much simpler than any of these methods. It is in cases where the deviation is five millimeters and upward that this operation is best adapted. It is performed under cocain and is divided into three parts: "1, tenotomy of both external recti muscles and stretching of conjunctiva and Tennon's capsule; 2, making the elliptic opening either on one eye or both; suturing this opening."

The details of the operation are described by the writer, as follows:

"1. Tenotomy of both external recti muscles, making an opening through the conjunctiva, over the insertion of the tendons. I then stretch Tenon's capsule until the cornea is turned well into the canthus—this is done on both eyes. . . . The stretching of Tenon's capsule is an important part of the operation. My method is as follows: The strabismus hook, which is a large one, flat on its side, is inserted in the open conjuctiva and Tenon's capsule, then with considerable traction all the tissues are stretched inward until the cornea is buried in the inner canthus. The stretching of the upper tissue has, as can be readily understood, a tendency to rotate the eyeball to a certain degree and leave the conjunctiva and Tenon's capsule intact below. To equalize the stretching, the point of the hook is reversed, and the lower conjunctiva and capsule stretched.

2. With the retractor forceps I grasp the conjunctiva vertically, midway between the cornea and caruncle and directly over the internal muscle, and draw upward the conjunctiva and as much of Tenon's capsule as I can. I raise the forceps two or three times to take up as much of the redundant tissue as my judgment dictates, and by this means one apparently is alway successful in separating conjunctiva and overlying tissue from the muscle, if it be still present; then with curved scissors I cut with one long

sweep the upraised conjunctiva and capsule close to the eyeball, making an elliptic opening, exposing at times, the attenuated muscle, and if no muscle be present, then the clear sclerotic; this opening now extends in a vertical direction beginning below the lower level of the cornea to a point above the same, its width over the muscle is about one full centimetre at its greatest diameter. The conjunctiva is then separated around the elliptic wound from its subconjunctival tissues on all points, even around the cornea if possible.

3. The elliptic opening is brought together with four sutures; the upper suture is inserted through conjunctiva and Tenon's capsule and across under conjunctiva and Tenon's capsule midway between the insertion of the superior rectus muscle and the margin of the cornea; a similar suture is passed through the lower margin of the conjunctiva and brought out midway between the insertion of the inferior muscle and the margin of the cornea; this thread is then tied and in like manner the upper thread; two more sutures are passed through the margin of the lips of the wound and united."

### On the Treatment of Dendritic Keratitis and Marginal Ulcer the Cornea with Tincture of Iodin.

FRIEDENWALD, HARRY, Baltimore, *(Amer, Journ. of Ophthalm.,* July 1900.) The writer's experience in the treatment of dendritic keratitis and superficial rodent ulcer with numerous remedies, among them atropin, eserin, bichlorid of mercury, formaldehyd in solution, and ointments of iodoform, iodol, aristol, etc., as well as the galvanic cautery, having been most unsatisfactory, he resorted to the use of the tincture of iodin for these affections, and with excellent results. He found that it never failed to bring relief, not only preventing the spread of the ulcer, but changing it in character to a simple abrasion which usually disappeared in a few days. His method of application is as follows: "A bit of absorbent cotton is wrapped firmly about a fine wood toothpick so as to form a narrow, firm swab; this is dipped into the tincture of iodin and the excess allowed to drop off. The eye having been prepared by instilling cocain and a drop of fluorescin the ulcerated area is thoroughly scrubbed until a distinct brown discoloration of the tissues is seen. The neighboring

very much loosened and curls up in all
s important to touch this, and es-
e infiltrations seen a millimeter away
line of ulceration; for the progress of
is usually this—that after these fine in-
are obsorbed the furrowed ulceration soon
ts appearance, The only error which is likely to
ade is to apply the iodin too cautiously, for I have
ver seen any ill effect from its being used too freely. Since I have become bolder in using it, it is rare that I need to make a second application. More than twice I have never applied it in any case—it was never necessary.

The application is usually followed by some pain, lasting for a few hours, though I have sometimes been told by the patients that they suffered but little pain. The eye is bandaged and an ointment of boric acid, iodol, or the like, is applied. The bandage can usually be dispensed with after a day or two, though it may be well to use the ointment a few days longer."

### Review of the Present Status of Jonnesco's Operation.

HARTWIG, MARCEL, Buffalo, *(Journ. Am. Med. Ass'n.*, July 7, 1900.) Altough Jaboulay made the first sympatheticotomy, and although Baracz had already proposed full neurectotomy of the cervical sympathetic in 1893, the author designates this operation with Jonnesco's name because he was the first man to do the full neurectotomy on both sides (1896), and up to the present time has performed more of these operation than all other sugeons together.

The writer reviews the various physiologic effects of cutting and resecting the sympathetic nerves, the purposes of the surgeons who first performed the operation, and the theories that attempt to explain its beneficial results. He summarizes the final results of Jonnesco's operation as far as ascertained and published in reference to glaucoma, as follows:

"There were eight cases where vision was not lost, and in each there was improvement, particularly in the glaucoma chronic simplex where iridectomy is useless. Here he removed the uppermost ganglion, except in one case in which exophthalmic goitre also was present. In all there were 42 bilateral resections with no deaths from the operation. Later on six epileptics died. . . .

In the Societé de Biologie, Dejérie criticised sharply the results obtained in epilepsy, particularly Chipault's, who, according to Schober's report, could not refute the statement that in Paris not a single cure had been obtained. Yet Professor Dupuy had also to acknowledge this. Paris having been the nidus for this operation, it does not speak well for its effect on epilepsy.

In glaucoma generally those cases were submitted in which vision was almost lost and iridectotomy had proven unsuccessful; still improvements were generally noted where vision was not entirely lost. Mohr had improvements from vision $^{5}/_{15}$ to $^{5}/_{9}$; field 5 to 10 degrees. Dayreux saw a failure of Abadie's. Demicheri, in Montevideo, had very decided improvement in three cases.

Panas and Jaboulay noted the disappearance of the hypotonia in three months and assumed that the nervous influence travels through the vagus and trigeminus. Abadie saw in a case of two years' standing vision increase, after several months, from $^{1}/_{10}$ on the left to $^{1}/_{3}$ and on the right from $^{1}/_{2}$ to $^{2}/_{3}$, the pupils retaining their normal conditions; but in another case, the vision again deteriorated after a year.

Dr. T. M. Ball, of St. Louis, had two improvements; but in a case of atrophy of the optic nerve the result was nil. In exophthalmic goitre the most gratifying results were obtained by others than Jonnesco."

### Surgery of the Tear-Passages.

HUIZINGA, J. G. Chicago. (*Journ. Am. Med. Ass'n.* July 21st, 1900.) The writer gives a summary of his views concerning the general diagnosis, care and treatment of disease of the tear-passages, together with some hints as to the dangers to be avoided. He treats narrowing or closure of the punctum as a result of traumatism by opening with a narrow pointed knife and counteracting the tendency to close again by the daily use of a No. 6 probe introduced as far as the sac. It is at times difficult to find the opening into the canaliculus or the canal may be closed for some distance, in which case it is necessary to make the opening centrally from the punctum. For simple contraction he finds simple dilatation sufficient. The treatment of constriction of that part of the canal between the punctum and sac the writer finds less satisfactory in a large proportion of cases. Dilatation is only of temporary benefit and slitting the canal, and converting it into a groove he considers unscientific and crude as well as unsatisfactory. He is strongly opposed to Theobald's method of slitting and dilating to such an extent that 4 mm. probes may be passed. His objections are that the force required makes the procedure "dangerous and reprehensible" and that the large opening allows fluids to be forced upward from the nose into the eye. In order to treat these strictures of the canaliculus without interfering with the physiological function of the organ he has adopted the following method of procedure: "The punctum is dilated to such an extent that a knife made for this operation may be introduced with the least possible injury, for ordinarily it does not need to be cut. Having first ascertained the exact location of the stricture by means of probing, the knife is passed into the canal with the back of the blade firmly hugging the wall of the canaliculus toward the border of the lid, so as to injure the mucous membrane as little as possible. The sharp edge of the knife is directed downward in case of the lower, und upward in case of the upper, canaliculus, until it reaches the stricture, which is cut by a sawing movement. The knife is withdrawn just as carefully as it had previousily been introduced. In the lower canaliculus the cut is made downward and in in the upper it is made upward. In this way little or nothing is cut except the stricture, and the direction in which it is cut is such that it in nowise interferes with the proper physiologic function of the organ. It does not sever the fibers of Horner's muscle, which controls the peristaltic action of the canaliculus; neither is the canal converted into a groove, but it retains both the shape and the function of the organ.

The after treatment consists of irrigations with boric acid solutions and the regular use of a No. 8 Bowman probe as follows: Daily for the first week; every second day for the second week; every third day for the third week, and once a week during the three following weeks. I need scarcely mention that neither probing nor cutting should ever be attempted without first having taken the most perfect aseptic precautions possible."

When an abscess of the sac has developed consequent upon a stricture situated at the point of junction of the sac and nasal canal the author recommends treatment similar to that for abscess in any other part of the body, namely: incision, emptying of contents and cleansing with antiseptic solutions. No immediate attempt should be made to dilate the stricture. This should be deferred till the third or fourth day, when a small probe should be passed if possible. The stricture should not be cut until all danger of infection from the abscess has passed.

If after careful examination it has been ascertained that the obstruction to the canal is of a bony nature, the author advocates extirpation or complete destruction of the lacrymal sac, with or without excision of the lacrymal gland. He can see no good reason why the gland should remain after destruction of the sac, since its presence is a source of considerable annoyance, and its absence is followed by no ill results.

Lastly the writer calls attention to the necessity of being certain that no stricture exists at the nasal extremity of the canal. For this purpose an extra long probe should be introduced just like a Bowman probe as far as it will go, when it is twisted around about a quarter of a circle, so that the point of it is directed medially and pushed down about half an inch farther. In this way the entire canal is thoroughly dilated from end to end.

### The Order of Development of Color Perception and of Color Preference in the Child.

HOLDEN, WARD A. AND BOSSE, K. K. New York. *(Arch. of Ophthalm*, May, 1900.) In order to clear up the confusion that exists as shown by the varying results of previous investigators in regard to the development of the color sense in the child, the writers examined more than two hundred children of various ages selected from among the brightest and least shy inmates of a dozen nurseries, hospitals and asylums in New York.

"It is evident," they say, "that up to this time no one who has studied color perception in young infants has used a test by which it was possible to demonstrate that the infant actually perceived particular colors, for in every case in which an infant reacted to a colored object it could not be proven that the reaction was not due to the difference in luminosity between the test object and the background rather than to the particular hue of the test object. For a reliable test of color perception in young infants, difference in luminosity between the colored object and the neutral background must be eliminated. . . . When we place a square of red paper upon a gray background of exactly the same luminosity, the red-blind eye will perceive the red square as neutral gray, lying on a background of similar gray, and, if the square has not a perceptible outline, the background will appear of a uniform gray, and the presence of the square will not be recognized. Therefore, when a square of red paper on a gray background of the same luminosity is recognized by an eye, we know that the eye perceives red.

The test we used for determining the earliest perception of a color in young infants consisted in presenting to the infant a piece of tissue paper of that color, 15 mm. square, upon a background of gray paper having the same luminosity as the colored paper, and observing whether the infant made an effort to grasp the colored square. If it made an effort to grasp the colored square it must have perceived that color."

The routine method employed by the writers of examining infants was as follows: "A large sheet of graduated gray paper was laid upon a sheet of stiff cardboard and the dark ened held before the infant. Several pieces of white paper of different sizes were placed successively on the dark gray and the infant was urged to pick them up. After the infant had entered into the spirit of the test a flat piece of red tissue-paper 15 mm. square was laid upon the dark end of the gray sheet, and when the infant grasped for it, the sheet was withdrawn and the square of red paper pushed along until it lay upon a gray of equal luminosity as seen from the infant's view-point. If, when the sheet was presented again, the infant grasped for the red paper, it was recorded as having perception for red. If a positive result was obtained with red, the other spectral colors were tried in succession, the test being stopped whenever the infant became inattentive or the reactions doubtful. If some colors caused a reaction while others did not, control tests were made after an interval or on another day. . . . The results may be stated in a few words. Before the age of six months definite reactions were not obtained. With precocious infants of six months and average infants of seven or eight months a prompt reaction was usually obtained to red, orange and yellow, but as regards green, blue and violet there was considerable difference in different infants. . . . With infants of nine months there was usually prompt reaction to red, orange, and yellow, and more sluggish reaction to green, blue and violet. With infants between ten and twelve months there was often equally prompt reaction to all colors. Generalizing, we may say that the precocious infant may perceive and react to all the colors of the spectrum as early as the seventh month, and that the average infant will perceive and react to them all by the tenth month, the colors of the red end of the spectrum being reacted to a little earlier than the colors of the violet end."

To determine the order of attractiveness of colors at different ages the writers offered to the child ribbons of the six fundamental spectral colors: red, orange, yellow, blue, green and violet, and it was urged to pick them up one at a time. Those children, which unquestionably exercised choice, were recorded as responding positively to the test, while others which picked up the ribbons in sequence, or at random, were recorded as responding negatively. "It was found that all those infants between seven and twenty-four months of age who were recorded as responding positively, picked up red first, orange and yellow second or third, and green, blue, and violet, fourth, fifth, or sixth. In other words they selected the colors approximately in the order of the spectrum, beginning at the red end. It was found also that in the first age group, seven, to fifteen months, almost all the infants positively exercised choice. In the second age group, sixteen to twenty-four months, only about one quarter of all the infants responded in a positive manner. In the third age group, two to three years, the percentage of children exercising choice diminished still more, it being found in only three out of twenty-six. . . . . . In the fourth age group, three to four years, there was again a greater percentage of children positively exercising choice, but only one chose the colors beginning with red, while many others began with blue. . . . . . . In the next four age groups, from four to eight years, the percentage of children with positive choice increased steadily. There was a steady increase also in the number of children who began their selection at the blue end of the spectrum and ended it at the red. Only an isolated instance of red preference occurred during this period, and the atypical cases decreased to about seven per cent. Thus blue preference became almost universal at the age of eight. The last age group, eight to thirteen years, presented about the same features as were shown at the end of the preceding group. A slightly higher percentage of children exercised positive choice, and this was almost without exception blue preference."

As a result of the writer's experiments it would seem that the young infant "responds to the exciting colors in a physiological or almost instinctive way, choosing the colors of the red end of the spectrum before those of the blue. As the psychical development proceeds, and the child becomes more distinguished from the animal, and mental processes dominate the earlier more physiological reactions, we find first an indifference to all colors, and a little later, as a rule, a dislike for the exciting reds and yellows, and a preference for the less exciting colors of the blue end of the spectrum."

### On the Limitation of Physical Methods in the Investigation of the Physiological and Psychical Phenomena of Sight.

EDRIDGE—GREEN, F. W. (*Lancet*, Aug. 4th, 1900.) In a paper published in The Lancet of May 26th, 1900, the writer showed how difficult it was to correctly ascertain the color perception of any person if we ignored color names. In this paper he wishes to show that in investigating physiological, psychical, and pathological phenomena we must employ methods which are suited to the case in hand and not those which are so admirably adapted to the study of the physical phenomena themselves. The latter are the stimuli which, acting upon the body, give rise to the sensation. The writer therefore asserts that if his view be correct, that color is a point of difference perceived by a perceptive centre in the brain, a method which aims at ascertaining the color perception of an individual by measuring the apparent luminosity of the colors he perceives, is as likely to achieve the desired result as it would be if applied to ascertain any other idea of the mind. He shows by an example how inefficient these physical methods are to elucidate the phenomena of color perception, and then outlines his views on the perception of color, in part as follows: "I believe that light acting upon the retina liberates the visual purple from the rods and a photograph is formed, the cones and optic nerve-fibres conveying the impression to the brain...... During the last ten years I have collected evidence that proves not only that there is a visual substance but that that substance is purple—namely, the complementary of pure green...... The visual substance being decomposed by light sets up by chemical, mechanical, electrical, or some other physical action, impulses which are conveyed to the brain through the cones and optic nerve-fibres, the cones being the terminations of the perceptive fibres in the retina. The whole impression being brought to the centre of memory, different portions of the impression—color, form, size, luminosity, etc.—are conveyed to the mind through definitive perceptive centres. In the case of color, this perceptive centre is only able to distinguish six definite points of difference (colors) in the spectrum which really presents millions. We, therefore, for the normal sighted have a hexachromic theory of color-vision which is independent of light and shade."

In addition to the points already made, the following appears to the writer as serious objections against the ordinary physical methods of ascertaining the color perception of an individual.

"*Absorption of light by the media of the eye.*"—It is obvious that the media of the eye vary slightly in color in different persons. This produces a variation of the color curve in each case without in any way affecting the real color perception of an individual. For instance, a normal-sighted person's vision is still hexachromic when he looks through a pale yellow glass.

*Hyperesthesia to certain colors.*—Another source of error in matching colors with white light is, that persons differ as to their sensibility to all colors or to certain of them just as they differ in their physiological actions in other parts of the body. One person can read in a very feeble light but is dazzled by a light which to another person is quite comfortable. A person of this kind matches a red with a gray which is much darker than that chosen by another person, though both may have equally good color perception. Again men vary as to their sensibility to certain colors; one is more affected by red, another by green, and another by yellow. We can also have temporary hyperthesia, an exaggerated example of which is found in photophobia.

*Idea as to comparative luminosity.*—In matching colors with white light or with each other much depends upon the observer's idea of that color. If I make a match of red and gray with the idea that red is a very bright color I shall make a match with a much lighter gray than I should if I had the idea that red was a very dark color. . . .

In conclusion, I will point out that we must always be careful in examining a person by physical methods that we do not obtain results which are only physical, chemical and electrical phenomena. When the phenomena are physical they cannot be measured by the balance and the rule but must be gained by direct evidence from the mind itself."

### Mental Disturbances After Operations upon the Eye.

POSEY, WILLIAM C., Philadelphia. (*The Philadelphia Med. Journal*, Sept. 15th, 1900.) In order to ascertain the cause of the delirium occasionally following operations upon the eye, the writer collected cases from his practice and from the records of the Wills Eye Hospital, 24 in all, in which this complication occurred. He reports brief histories of these cases and surveys the literature of this subject. Summarizing these cases, he finds that the delirium appeared eleven times after simple extraction; eight times after the combined operations, three times after iridectomy for glaucoma and twice in traumatic cases. Three of these cases occurred in subjects over 80 years of age; seven over 70 years; nine over 60 years and two during the sixth decade. The traumatic subjects were much the youngest. Atropin was used in some cases, but not in others; its employment, however, did not seem to have any influence upon the mental condition. Both eyes were bandaged after the operation in every instance.

After a critical study of the entire subject, Posey reaches the conclusion that the cause of delirium after operation upon the eyes is largely psychic, and he agrees with

Parinaud that it is due to the preoccupation upon the part of the patients prior to and after the operation. While such patients appear calm and collected and submit to the operation most cherfully, this state of quietude is assumed; in reality there is great though suppressed excitement. The intense desire to assist the operator during the operation and not to wince at any pain is also a great nervous strain. Furthermore the supine position and the unusual stillness of the surroundings, seem to the writer, to exert additional influence upon the temporary change in the psychic balance.

In regard to treatment, he says that it should be administered at the first indication of the appearance of any mental disturbance, and advises "the free and repeated administration of chloral and bromides. As the statistics do not show any marked improvement in the symptoms following the removal of the bandage from the unoperated eye, this step is not to be advised, unless the wound caused by the operation be thoroughly healed. There is also no reason to discontinue the employment of atropin."

### The Occurrence of Retraction Movements of the Eyeball Together with Congenital Defects in the External Ocular Muscles.

Wolff, Julius, New York. (*Arch. of Ophthal.*, May, 1900.) By the term "retraction movements" the writer means "that pathological condition in which, by the contraction of one or more of the external ocular muscles, the eyeball is drawn backward into the orbit, and returns to its former position when this contraction ceases." He found only seven cases with this peculiar condition in ophthalmic literature; he adds the histories of five cases which he has observed. In comparing these twelve cases he finds that they all presented a most striking similarity in their general features, inasmuch as the retraction movements are regularly accompanied by several other symptoms which together form a typical and well-defined clinical picture.

The writer summarizes his remarks upon this subject as follows:

"Retraction movements in the human eye have been described in only seven cases, to which five are herewith added.

The retraction movements never occur as a solitary symptom, but always form part of the same group of clinical symptoms, producing a well defined clinical picture, whose characteristics are as follows:

The condition is always congenital.

Retraction occurs during attempted adduction, which may be absent or present, but is always less than normal.

Retraction is accompained by narrowing of the palpebral fissure.

Partial or complete paralysis of the external rectus of the retracted eye is regularly present.

Some cases present a moderate constant retraction and narrowing of the fissure even in the primary position. In these cases attempts at abduction produce a propulsion of the globe and widening of the fissure.

When the retraction is considerable, the cornea is turned upward in some cases, downward in others, even when the fellow eye makes a purely lateral movement. This is due, probably, to resistance made by the optic nerve.

Two explanations are offered to account for the retraction: the *faulty insertion* and the *fixation theories*. Though the former is supported by some evidence, the latter accounts more satisfactorily for all the symptoms and is even better supported by evidence.

Surgical interference may benefit some of the cases.

There is reason to believe that the retraction movements are often overlooked and that these cases are not so rare as the small number reported would indicate."

In the same number of the Archives Dr. H. Knapp and Dr. A. N. Alling also report cases of this peculiar anomally, which were successfully treated, from a cosmetic point of view, by surgical interference.

### The Effect of Flashes of Electric Light on the Eye.

ROY, DUNBAR, Atlanta, Ga. (*Medical News*, Sept. 8, 1900.) The writer does not lay claim to any original investigation on the subject of this paper, but considering it to be of great importance, desires to bring forth from others their own personal experiences. He reports three cases of injury to the eye by intense electric flashes and gives a survey of the principal contributions of other writers on this subject. He emphasizes the great similarity in the effects of electric flashes on the eyes and the symptoms of "snow blindness." Immediately after the flash vision is generally lost for a few minutes but gradually improves. Redness and swelling of the lids accompanied by a burning feeling soon follow. There is a zone of injection around the cornea which may be somewhat hazy. In some cases a grayish discoloration in the region of the macula may be seen. Severe pain in the eye-balls follows, but not until several hours after the injury. The writer was able to cause relief by instilling cocain and atropin and the use of hot fomentations. The pupils are usually found contracted and there is photophobia. The milder cases recover fully, but in others pigmentation in the region of the macula ensues, leaving a positive scotoma and more or less impairment of vision.

The writer does not agree with those who say that no bad results have ever been observed in the eyes from the ordinary use of the incandescent light. He relates instances of ocular trouble which were relieved by the substitution of student lamps for incandescent lights for working purposes. He deprecates therefore the use of incandescent lights as a means of illumination for reading or writing and prefers the Welsbach light properly subdued by white shades.

### Holes at the Macula.

OGILVIE, F. M. *(Report of Ophthal. Soc. of the United Kingdom, Brit. Med. Journ.* July 14th, 1900.) "Mr. F. M. Ogilvie read a paper on one of the results of concussion injuries of the eye—"holes" at the macula. He had collected all the published cases presenting this lesion, and he divided them into two large classes: (a) those in which there was no detachment of the retina, and (b) those in which detachment was present. He showed lantern slides of the appearance of the fundi in all these cases which invariably followed concussion injuries, such as blows from blunt objects, from stones thrown from catapults, while one most interesting case he had previously shown to the Society in which the injury was due to a bullet which apparently hit the back of the eye in passing through the orbit. He advanced several theories to account for the holes which, as a rule, were about 1 $^1/_2$ dioptre in depth. He summarized the conditions brought about as follows: (1) The lesions are definite and central; (2) they are the direct result of violence; (3) the injuries are permanent; (4) the general disturbance of vision is not great; (5) they are the result of concussion injuries only."

### Note on the Preservation of Aqueous Solutions of the Extract of Suprarenal Capsule.

HOWE, LUCIEN, Buffalo. *(Amer. Journ. of Ophthalm.* July, 1900.) The following method of preparing a stable solution of suprarenal extract is recommended by the writer: "One-half drachm of the extract is rubbed in distilled water to a paste, the water being added very gradually then, and afterward until a fluid ounce of the mixture is made. This is placed in a capsule, gently heated over a gas jet at about 160° F. for fifteen to twenty minutes, and whatever amount is lost by evaporation is replaced by sufficient sterilized water to make again a fluid ounce. In that ounce fifteen grains of boric acid are then dissolved. The solution is filtered, or only the clear portion used. Further precipitation usually occurs, but this solution will keep at ordinary room temperarure, in well-corked bottles, for several weeks without apparent alteration either in its character or in its physiological effect."

### Headache from Eye-Strain: Its Diagnosis and Treatment.

WOOD, CASEY A., Chicago, *(Medical News,* July 28, 1900.) The writer briefly presents in this paper the peculiarities of the headaches that proceed from impaired ocular function. He believes he is well within bounds when he places the ocular element of mixed headaches at 40 per cent. and feels certain that fully 80 per cent. of all frontal headaches are concerned in affections, mostly functional, of the eyes. The site of ocular headaches in the order of frequency is, (1) the supraorbital, (2) the deep orbital, (3) the fronto-occipital, and (4) the temporal region. The exciting causes mentioned by the writer, which may aid in the diagnosis, are those tasks which require the use of the accommodation and convergence; reading, writing, drawing, painting, typewriting, etc. A question which he invariably asks asthenopic female patients is whether their headaches are brought on by shopping excursions. As characteristic of ocular headaches, he mentions the fact that they are almost always accompanied by signs and symptoms easily referred to the eyes, such as running together of lines or letters, reddening of the sclera, and burning or itching of the lids. The forms of headache which are most apt to simulate ocular headaches are the supra-orbital and the supra-nasal pain of nasal disease, supra-orbital malarial neuralgia and so-called "nervous" headache, as described by Roosa.

Speaking of the treatment of ocular headaches, the author mentions as a prime requisite a careful inquiry into the refraction, accommodation and oculomuscular balance of the patient in order to remove the commonest causes of these headaches, hypermetropia, astigmatism and heterophoria. He further attaches importance to the removal of such exciting causes as insomnia, dyspepsia and overindulgence in tobacco and alcohol, tea and coffee.

The writer is opposed to internal drug treatment to produce temporary relief, but recommends very hot and very cold fomentations, leaving the choice to the patient's preference after trying both. In conjunction with these a mixture of spirits of lavender and alcohol, each three parts, and spirits of camphor, 1 part, may be rubbed over the forehead and temples.

### A Comparison of the Cyclopegic Action of Scopolamin and Atropin.

ROGERS, W. K., Columbus, Ohio, (*Amer. Journ. of Ophthalm.* Aug. 1900.) The writer conducted a series of experiments on 59 eyes free from pathological conditions. On the day of the first examination he instilled a one-half per cent solution of scopolamin in conjunction with cocain every fifteen or twenty minutes for an hour and a-half or two hours. After determining the refraction in this condition, a prescription for a one-half per cent. solution of atropin was given, to be used three times a day, for two days, when the refraction was again determined. In 54 out of the 59 cases he found the results of scopolamin to contrast unfavorably with those of atropin. The maximum difference in hypermetropia was 1.25D; in myopia 1.0D. Non-coincidence of axis was found in 11 cases. The writer, therefore, concludes that, though, as an evanescent cycloplegic, scoplamin is of great value, final reliance must be placed upon atropin for the attainment of the greatest accuracy.

# ABSTRACTS FROM ENGLISH COLONIAL OPHTHALMIC LITERATURE.

BY FRANK ALLPORT, M. D.,

CHICAGO, ILL.

Quarter ending September 30th, 1900.

### Notes on Ocular Leprosy.

NEVE, ARTHUR. *(Indian Medical Record.)* Out of 80 patients at present in the Kashmir State Leper Asylum 20 have some affection of the eye.

Paralytic ectropion is the usual condition in anesthetic leprosy; this leaves the eye exposed and often there is conjunctivitis and ulceration of the lower edge of the cornea.

In tubercular lepers the characteristic eye disease seems to be an infiltration which commences in the sclero-corneal margin and extends around the circumference of that margin. Often it commences and extends as a nodule and includes the iris, cornea and sclera.

The iris is often affected. Nodules form in the angle of the anterior chamber, the iris becomes softened by a chronic inflammation and the deposit of lymph tends to occlude the pupil and cause blindness.

The deeper structures are rarely affected. Nodules never appear on the retina or choroid from this disease and the optic nerve is usually in good condition. Sometimes from extension, the ciliary nerves or the ora serrata may be diseased but the condition is not primary in this region.

### Extraction of Cataract in the Capsule.

SMITH, CAPT. HENRY, M. D. *(Indian Medical Gazette.)* Dr. Smith gives us statistics from 1804 cataract cases operated on at Jullundar Civil Hospital from June 1st, 1899, to May 1st, 1900.

| | No. | Prolapse of Iris. | Iritis. | Escape of Vitreous. | Capsule givingway during operation. |
|---|---|---|---|---|---|
| Extraction of lens in capsule without iridectomy. | 692 | 7 or 1.01% | 4 or 0.6% | 96 or 14 % | 88 or 11.4% |
| Extraction of lens in capsule with iridectomy. | 78 | 2 or 2.5% | 1 or 1.3% | | |
| Total number of extractions of lens in capsule. | 770 | 9 or 1.6% | 5 or .65% | 96 or 14 % | 88 or 1.4% |
| Extraction with scratching of capsule. | 1034 | 16 or 1.5% | 14 or 1.3% | 85 or 8.4% | |

Dr. Smith claims that the operation is as simple as any other, that it leaves nothing behind to become opaque, and no foreign matter to set up iritis, that no instruments are inserted after delivery of the lens; there is however a greater liability to escape of vitreous.

In the operation he removes the speculum as soon as the incision is made, then tries to control the contraction of the orbicularis and so obviate the escape of vitreous by having an assistant hold up the upper lid with a blunt hook and the lower lid down with the thumb. With a blind hook over the juncture of the lower and middle third of the lens and a spoon above the incision, he makes pressure and counter pressure; when the lens is about $^{2}/_{3}$ out, if it does not come easily, he keeps up the pressure with the spoon and shifting the blind hook forward gently tilts the lens by setting the edge in the concavity of the hook. At this point the capsule is sure to give way, if there is any lack of skill or if the incision has been too small. The lens core escapes, but the capsule retracts with some of the lens matter in it. In order that it may not slip back he keeps up the pressure with the blind hook, drops the spoon from the left hand and with ordinary dissecting forceps pulls out the capsule which is protruding from the wound and with it any contained lens matter.

Dr. Smith also speaks of soft cataracts and draws attention to the two varieties, one in which the substance within the capsule is of a milky consistency, the other semi-gelatinous with a stringy tendency; one of a skim milk color and uniform, the other white and not uniform.

The needling operation he finds very satisfactory in the milky variety—but the semi-gelatinous, he claims, is never absorbed after needling and the lens matter let loose may set up an iritis. He always extracts the semi-gelatinous kind.

### Hereditary Optic Atrophy.

HAWKES, C. S. *(Australasian Medical Gazette.)* Dr. Hawkes records the history of two families, 4 generations of one and 3 of the other, in which the females transmit optic nerve atrophy to their male descendants, although they are themselves unaffected. In most of the cases the disease commenced at about the age of 30—there were several exceptions, however, one as early as 14. The disease progresses rapidly to about vision of large objects and then remains in this condition for the rest of life.

Most of the cases were not seen until atrophy was present, but in the few seen early enough, a retro-bulbar neuritis was the condition found.

### Melanotic Sarcoma of the Choroid.

ROWAN, JOHN, M. B., *(Glasgow Med. Journal.)* Dr. Rowan illustrates a large melanotic sarcoma of the choroid growing from behind forward and occupying nearly two-thirds of the eyeball. It pushes the retina forward and also has a small spot of growth starting back along the optic nerve. The retina is also much infiltrated.

The patient died about a year after removal of the eye, from malignant growth of the liver.

### Cerebellar Tumor with Double Optic Neuritis.

DUNCAN, J. T., M. D., *(Canada Lancet.)* Patient was well until about two years ago when he began to be unsteady in his gait and had great difficulty in walking and about one year ago he began to lose sight and hearing.

In February last, the eyes were in the following condition:—left proptosed (which condition was, however, congenital); both had nystagmoid movements, pupils unequal but reacted sluggishly to light and in convergence. Vision equaled.—Right, only light perception; left, fingers at 18 inches. An ophthalmoscopic examination showed choked discs, veins full and tortuous, hemmorrhages in the left and a patch of choroidal atrophy in the right. Ears—almost total deafness in right ear. The gait was ataxic—most marked in the right leg, the knee jerk was absent in the right and exaggerated in the left. There was incoordination of the upper and lower extremities. There was anaesthesia of the anterior surface of the right thigh. As to diagnosis—the position of the eyes gives no help on account of the congenital condition. The pupils are unequal but they also react to light.

The general symptoms might point to a purely spinal disease but the condition of the optic discs shows a pressure in the cranical cavity, perhaps caused by a tumor. If in any part of the cerebrum it would cause other symptoms in addition to optic neuritis. There could be, however, a tumor in the corpora quadrigemina with the symptoms just as in this case. The ataxia preceded the optic neuritis which leads to the opinion that the tumor is in the right hemisphere of the cerebellum and that it presses upon or involves the right auditory nerve.

The author advises an operation to remove a portion of the skull below the tentorium to take away the pressure and so relieve or cure the optic neuritis even if the tumor were not found.

# ABSTRACTS FROM ITALIAN OPHTHALMIC LITERATURE.

By Casey A. Wood, M. D.

Chicago, Ill.

Quarter Ending September 30th, 1900.

### New Ocular Tonometer.

Gradenigo, P., (*Annali di Ottalmologia*, xxix, 3—10, 1900.) Hitherto tonometers have been of little use and have been discarded by the inventors themselves on account of their imperfections. This one, made after the author's design, consists of a balance and a support. The first is a hollow cylinder of glass, 44 mm. long, of the diameter of about the human cornea; in the axis of this cylinder a small rod, 2 mm. thick, runs freely—perforated and held in position by two wheels; one end is free, while the other is continued by a metal rod which sustains the plate of the balance and rises a few cm. above the margin of the hollow cylinder; weights may be placed on this plate and a movable needle registers the result. The other part of the tonometer is formed of a strong metalic support. The instrument is rendered sterile by antiseptics. Some drops of a week solution of cocain being introduced into the conjunctival sac after 4-5 minutes the patient takes a supine position so as to have the face horizontal; the ring corresponding to the eye to be examined is placed exactly in front of the exposed eyeball. The support is then put in the ring so that, being kept in a vertical position, it may rise exactly with its circular extremity free and with the end having the movable rod on the cornea and sclera. Thus, the indicating needle, moved by the rod which presses on the eye, should be placed at the point in the graduated circle marked O; then every deviation, determined by a fixed weight, will show the amount of resistence met with necessary to indent the surface of the eye. The instrument has the advantage of easy application, firm contact, and registers automatically the most delicate changes.

### A Case of Periodical Paralysis of the Motor Oculi Communis (Hemicrania Ophthalmoplegica) in an Hysterical Girl Suffering from Irregular Menstruation.

MORGANO, PAUL, (*Annali Ottalmologia*, XXIX, p. 16, 1900.) The author recites in detail the history of an interesting case of this affection, first described by Gübler in 1860.

The patient, aged 17, had a sister who was epileptic; her mother was subject to convulsions, and her father, though healthy, was addicted to alcohol.

As an infant she had scarlatina; at three she had purulent conjunctivitis with ulcerative keratitis; she remembers at fourteen to have had severe headache accompanying the menses; the latter were always scant and sometimes missed.

Patient first appeared at the clinic Sept. 6, '96, having great pain in right eye, aversion to light, difficuly in raising the eyelid and the globe, extremely tender to touch. The eye, when the lid was raised, was seen to be turned down and out; inward motion was lost; vertical motion limited; intraocular tension seemed normal; vision for near objects was indistinct, indicating paralysis of accommodation.

Recognizing the hysterical type bromid of potash and antipyrin were prescribed, so that in a couple of days the patient was much better, the paralysis persisting only in the rectus internus; ophthalmic examination was negative. These attacks recurred several times with the menses, disappearing with their cessation.

In 1897 she had eight attacks of third nerve paresis on the right side, — coinciding always with the menses. They were preceded by convulsive phenomena, and disappeared in four to eight days without leaving any trace. The patient was again seen in May 1898, in a deplorable state: the lid of the right eye dropped so as to cover four-fifths of the cornea; there was pain in the right side of head, eyebrow and side of face, aggravated by pressure on the 5th pair; there was besides an expression of agony, livid face, Cheyne-Stokes breathing, and pain in the epigastric region.

The patient was sent to the hospital and diagnosis made by Dr. Abundo of grave hysteria with functional paralysis of the lower joints. She was treated with subcutaneous injections of arsenic and the administration of tablets of extract of ovary.

Cure took place after treatment lasting forty days; no convulsion nor oculo-motor paralysis since Dec. '98, only a slight headache and some pain with menses. The author concludes with regard to this case:

(1) That the disease was the result of a constitutional predisposition of the nervous system, (2) that it was determined by periodical disturbances of the cerebral circulation, and (3) that these disturbances of circulation in their turn were intimately connected with disturbances of menstruation.

### Keratomycosis due to Aspergillus Fumigatus.

BASO, DOMENICO. (*Annali di Ottalmologia*, xxix, p. 33, 1900.) According to the author but four cases of this rare disease have been reported, his being the first observed in Italy.

Martha B., 30 years old, had disease of the left eye for about a week; says she has had no wound of the eye and had suffered from no preceding malady; has had no blennorrhoea of conjunctival sac nor epiphora; she nursed a boy of five months. The cornea was entirely opaque, of milky color, more dense at the centre where there was a discolored ulceration of the size of an average lentil. It appeared dry and had a yellowish base as if of necrosed tissue. The margin of the ulcer was a little raised, but not broken; the aspect of the cornea had some resemblance to that in cases of deep burns by chemical substances; the anterior chamber was of normal size and full of fibro-purulent exudate, which formed a yellowish hypopyon with irregular level; the pupil was visible only with difficulty and sidewise; in the conjunctiva, the signs of reaction were not much accentuated, only a little whitish, dense secretion; the clinical aspect, on the whole, was that of a hypopyon keratitis, having special characters and different from those of the common ulcus serpens. Two subconjunctival injections of sublimate at intervals of 8 days did not have much effect on the process, which remained almost stationary for about a month. A deep cauterization was next made by the galvanic loop of all the ulcerated space, and after this, the patient began to mend slowly; the loss of substance was gradually repaired by cicatricial tissue adhering to the pupil, and a cure was effected in 3 months. The diagnosis was confirmed by bacteriological cultures. The author gives directions for the differential diagnosis of keratomycosis and the common ulcus serpens.

### The Denti Procedure for the Cure of Lacrymal Tumors.

SGROSSO, P., *(Ibid*, p. 97,) speaks of this procedure which attempts the conservation of the sac and the rapid healing of the wound of operation. The process consists:

1. In the incision of the anterior wall of the sac and its cupola and also of the internal palpebral ligament.
2. In stricturotomy.
3. In scraping the sac with de Wecker's knife and treating the nasal canal when it is much stenosed.
4. In haemostasis by tamponnade with sublimate 1 per cent., followed by protracted irrigation of the lacrymal passages by Weber's sound.
5. In the application of 2 to 3 sutures to unite the lips of the anterior wall of the sac, reaching as deeply with the needle as possible into the soft parts.

Denti used this process in 50 cases, some of chronic purulent dacryocystitis with ectasis of the sac more or less pronounced, others of phlegmon or abscess with cutaneous suppuration and lacrymal fistula sometimes joined with caries of the os unguis, others with mucocele and empyema of the sac, cystic and discharging at the lachrymal duct or into the nose. De Vincentiis has used this process many times in his practice, but has often modified it; the author has used it but only in lacrymal tumors without acute inflammation and in mucocele of the sac. He did not use it in acute dacryocystitis and phlegmons of the sac as he did not wish to have cicatrices which would show. In the first five cases he obtained a cure in 3 to 4 days; the sixth was more obstinate, and since then he has added permanent drainage to the lachrmal passages. The complete operation as described by the author as follows:

1. Slight oblique incision of the skin of the sac avoiding the internal palpebral ligament and, when this is much distended, excision of a straight oval flap.
2. Dissection of the skin of the anterior wall of the sac

and removal of so much of it as is necessary to reduce the organ to normal size.

3. Stricturotomy and cleft of the inferior lachrymal canal, followed, if the state of the mucosa of the lachrymal passages require it, by scraping and in every case by washing with formol or sublimate.

4. Placing a permanent drain.

5. Suture of the margins of the residual mucosa of the sac and the skin.

6. Compression bandage for 5 to 6 days.

### Granuloma of the Iris.

DE BERARDINIS, D. (*Annali di Ottalmologia*, 1900, xxix, p. 128.) The author reports the sixth case known to Italian literature. It was that of a child of six years, who came of a healthy family. Trouble began by a little lacrymation and intolerance of light and some hyperemia which extended over all the cornea. A gray oval spot, the size of a lentil appeared below the pupil, which became gradually larger and of a yellowish color. The patient was brought to the clinic April 18, '99. Examination showed the eyelids to be normal as also the lacrymal canal and palpebral conjunctiva; the bulbar conjunctiva was injected at a short distance from the limbus, the sclera was somewhat ectatic; the cornea in its upper segment was quite transparent so that the state of the iris could be seen through it; the lower half was turbid, mostly in the peripheral zone, and of a dirty gray color with fine vessels in its deep strata; its upper half contained a yellow grayish mass which occupied more than the inferior half of the anterior chamber. This mass seemed uniform, but when viewed by a lens minute vessels could be seen which were easily distinguished from the parenchymal vessels of the inferior part of the cornea. Its anterier surface touched the concavity of the cornea but was separated from it above and formed a border similar to the equator of a biconvex lense with the concavity downward. This border concealed in great part the pupillary field and only left free a very small semilunar tract insufficient for the examination of the crystalline lens and the fundus of the eye. The rest of the yellowish mass was against and entirely concealed the lower half of the iris, while its upper half was dark and tumid with an irregular surface been thought to be a kerato-hypopyon but the diagnosis of DeVincentiis was tuberculosis of the iris. He enucleated the bulb April 19, 1899; the patient, cured completely by the operation, was dismissed from the clinic after a few days. There seemed to be no indication of any other tuberculous deposit. A rabbit inoculated from this eye showed no diffusion of tuberculous bacilli in the other organs, but in a guinea pig they were found disseminated in the lungs and other internal organs.

# ABSTRACTS FROM GERMAN OPHTHALMIC LITERATURE.

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Quarter Ending September 30th, 1900.

### Validol in Scotoma Scintillans.

NEUSTÄTTER, M. D., Munich. *(Die Ophthalmolog. Klinik.*, Juni 20, 1900.) The author's communication is prompted by the very beneficial results obtained in five cases of scotoma scintillans by the administration of 20 drop doses of validol. In the first place the patient did not notice any effect for a few minutes after taking the validol and the unpleasant symptoms seemed in no degree mitigated but in a short while the irregular lines became less conspicuous and then disappeared with the utmost suddenness and did not reappear. The visual field was affected only a few minutes and cleared up entirely. Subsequent attacks were relieved with the same promptness and only once was it necessary to take a second dose. The second case was benefited but disappeared from observation and was not heard of again. Of the three remaining cases two were affected like case No. 1, and they were immediately relieved. The fifth case was a man who was much addicted to the use of alcohol and the author thinks that this habit in a measure nullified the effect of the validol. The author does not say whether the menthol in the drug has anything to do with the happy effect. Validol, however, is pleasanter to the taste than menthol. It is a oleaginous substance and smells something like ether and has a decidedly pleasant taste when taken on a lump of sugar. In fact this is the proper way to take validol. The author considers that the agent should always be given a trial in this class of cases for it not only removes the scotoma but relieves the headache and as far as can be learned it is a harmless product. R. L. R.

### Forgetting How to See.

AXENFELD, M. D., TH. (*Klinische Monatsblt. für Augenheilk. Beilageheft*, 1900.) The author discusses this question in a very interesting manner and alludes to the contributions on this subject by Schmidt-Rimpler and Schnabel. His own observation is the principal feature of his paper and relates to the case of a child six years old who acquired cataract and who in spite of a successful operation one year later had in the meanwhile forgotten how to see but who subsequently regained normal vision. Axenfeld concluded that a child even up to the sixth year can from optical obstacles alone (such for instance as cataract) forget how to see within a year although light perception and projection are retained. The condition present after operation (in spite of sufficient visual acuity and good visual field) may be compared to that of the congenitally blind child which has been operated upon, the only difference being that in the former case the patient has learned how to see again more rapidly than is usually the case with the congenitally blind and this for manifest reasons. The condition here is not similar to the amaurosis after blepharospasm for in the latter instance at first localization even for lamp light is absent, the sense of direction seeming to be absolutely false, while in the case reported by Axenfeld the sense of direction resulted from or followed the operation. In both varieties, however, we have the same pronounced disturbance in the capacity for orientation, the complete lack of responsiveness to visual impressions the loss of memory as regards the things external or material and finally they resemble one another in the gradual but later on rapid return of sight. The author thinks his observation vindicates Leber's interpretation of this class of cases. R. L. R.

### Clinical and Experimental Studies of the Action of Tuberculin Upon Tuberculosis of the Iris.

SCHIECK, DR. FRANZ, Halle, a. S. (*Archiv für Ophthalmologie*, Bd. L. Ab. 2.) The author's exhaustive study is divided into a clinical and an experimental part. Under the first head he analyzes all the cases of iris tuberculosis which have been treated with tuberculin and which have been reported by other observers and in addition to these he reports five cases which came under his own observation. The injections of tuberculin were given every two days and were increased about 0. 1 Mg. every injection. He then gives us an analysis of one hundred and twenty-one, cases which he finds in literature and compares the results obtained in these cases with the results obtained in his own cases. One will certainly be impressed by the results which were obtained in a great number of the cases, some of the results indeed being brilliant, namely, in two of his own cases, one of Landgraf's and one of Zimmermann's. The conclusions which one draws from this portion of the work is that the tuberculin treatment should always be given a trial before proceeding to enucleation. If the injections be followed by irritation they should be discontinued for awhile and then taken up later on. He then proceeds to the experimental part of the work. The experiments were made on rabbits. A very interesting point which he brings out is that the tuberculosis of the iris in the rabbit can disappear spontaneously. This is contrary to the view held by Sattler, but is evidently verified by a number of Schieck's experiments. The conclusions which the author draws from his experiments are these: 1. There is no such thing as an immunizing action of tuberculin. 2. We cannot expect in every case to get a healing of either a corneal or an iris tuberculosis (experimental) in rabbits. 3. It can certainly be said that those cases which were treated with tuberculin did not run any more malignant course than those which were not treated. The fact that spontaneous cure can take place makes it rather doubtful whether we can determine exactly the effect of tuberculin upon the rabbit's eye.

R. L. R.

### The Anatomical Examination of a Case of Sympathetic Ophthalmia.

GRUNERT, DR. K., from the Tübingen Eye Clinic (*Klinische Monatsblt. für Augenheilk Beilageheft*, 1900.) In the domain of literature on the subject of sympathetic ophthalmia we find only one case similar to the one reported by Grunert, namely, the case reported by Deutschmann. The author's case was one where sympathetic ophthalmia followed a cataract operation. The patient was subject to epileptiform attacks complicated with albuminuria and died finally in a hospital of brain tumor. The clinical history of the case stamps it as one of sympathetic ophthalmia and the following are the findings as given by Grunert: The diagnosis of papillitis of the sympathetically affected eye could only be established by the anatomical examination as the clouding of the lens prevented a clear view with the ophthalmoscope. The connection between the papillitis and the sympathetic affection is not firmly established because the patient had a brain tumor, and contracted kidney with periodic albuminuria. The same may be said of the changes in the optic nerves, pia mater and chiasm. First of all we are struck by the anterior segment of the sympathizing eye, quite out of proportion to the clinical symptoms. The choroid on the other hand was normal. There was only a slight participation of the optic nerves and there was an entire absence of pathological changes at the intraocular ends of the optic nerves. The bacteriological examination, which was exhaustive, was absolutely negative. The condition found in Grunert's case differed diametrically from that of Deutschmann's case. R. L. R.

### The Weight of the Human Crystalline Lens After Extraction.

GRUNERT, DR. K., of Tübingen, (*Centralblt. f. prkt. Augenheilk.* June 1900.) The author has analyzed twenty-eight cases with the following results: The average age of the patients $65^1/_2$ years. The average weight of the twenty-eight lenses was 0.22 g. markedly less than what we have usually regarded as the weight of the normal lens, which Vierordt determined to be from 0,26 to 0,29 g. The lowest weight was 0.093 g. and was that of a hypermature shrunken lens while the heaviest was a luxated cataractous lens weighing 0,347 g. The average weight of uncomplicated senile cataracts (unripe) was 0,247 g, that of the ripe on the contrary only 0,215 g. In complicated cataract the average weight of the unripe lens was 0,235 g. while that of the ripe 0,230 g. Taking the weights of the complicated and uncomplicated unripe cataracts together (ten lenses) it will be seen that the average weight is

0,239 g. while that of the ripe (ten lenses) was 0,218 g. This result agrees with the clinical observations on this point which seems to indicate that in the formation of cataract the lens becomes cloudy in the process of taking up the intraocular fluids and in this condition we have an increase in weight of the lens and that with the completion of the cataractous process the lens loses its weight by giving up some of its fluid contents. The weight of the four luxated lenses was remarkably light having an average weight of only 0,181 g, that is to say, one and one-half times lighter than the normal lens. As regards the refraction of the eyes. In twenty cases the eyes were emmetropic, in three myopic and in five hypermetropic. The average weight of the lenses of the emmetropic eyes was 0,215 g. This light weight, however, may be attributed to the fact that one of the emmetropic eyes contained a very much shrunken lens. Leaving out this shrunken lens the average weight of the lenses of the emmetropic eyes was 0,221 g. The average weight of the lenses of the myopic eyes was 0,230 g. and of the hypermetropic lenses 0,215 g.

### Remarks Upon the Treatment of Gonorrhoeal Ophthalmia.

WOLFBERG, DR., Breslau, (*Wochensch.. f. Therap.* u. *Hygiene des Auges*. 14 Juni, 1900.) The author discusses five points in the treatment of this disease. First, shall ice be used and in what form? If the patient is seen soon after infection a few drops of either a 2 per cent solution of nitrate of silver or a 20 per cent. protargol solution is instilled into the eye and then a clean piece of ice should be laid in 100 grammes of water containing two drops of formalin. After dipping a small piece of linen or cotton pad into the solution it can be laid on the ice and from here placed on the eye. An ice bag is contraindicated since such weight would interfere with the movement of the lids. As to the use of nitrate of silver and protargol: If the conjunctiva is free of membrane it would be better to commence with silver nitrate, and unless positive improvement sets in at once, protargol must be employed (nitrate of silver 2 percent. and protargol 20 per cent.). 3. How shall pus be removed from the eye? He uses very weak solutions of formalin, so weak indeed that they cause no pain. He generally uses a six per cent. borax solution to which is added a little salt and to this added the formalin solution of the strength mentioned above. With this solution the conjunctiva is irrigated every fifteen minutes so long as there is any secretion. Of course great care must be taken not to touch cornea and conjunctiva, and if necessary the patient must forego sleep in order to prevent the accumulation of the secretion between the lids. 4. As regards protecting the good eye. This should always be done after the manner familiar to us all, an occlusive bandage being employed. The edges of a piece of borated lint are smeared with glycerine-gelatine laid over the eye and the edges made adherent with collodion. The patient is then compelled to keep his diseased eye open in order to see. 5. General treatment: This consists in keeping the bowels well open. He has seen benefit follow the internal administration of iodid of potash. R. L. R.

### The Changes in Curvature of the Cornea After Cataract Extraction.

TREUTLER, DR., Aachen, (*Zeitschr. f. Augenheilk, Juni*, 1900.) Treutler mentions the various works on this subject and the opinions of the authors as to the cause of the astigmatism, namely, the continued action of the intraocular pressure upon the cornea, the new formation of scar tissue between the borders of the wound, the normal pressure exerted by the external muscles of the eye upon the latter, and finally the absence of traction upon the sclera on the part of the zonula. The author then analyses the measurements made in twelve cases which came under his own observation. The first measurement was always made the day before the extraction and the second measurement as soon after the extraction as practicable, usually on the seventh day. He compares his own results with those obtained by Weiss, Dolganoff, von Reuss and Woinow and gives the tables of the latter. In all there are forty-nine cases. The following are the results. First. In every case there was a change in the refraction of the cornea. The radius of the vertical corneal meridian was made greater forty-three times, i. e., 88 per cent. Unchanged once, and diminished five times, i. e., 10 per cent. The radius of the horizontal corneal meridian was diminished forty-three times, i. e., 88 per cent. Unchanged once and made greater five times. From this then we get the rule that the vertical meridian is made greater and at the same time the horizontal meridian is made smaller. The remaining cases are to be regarded as exceptions which he explains by suggesting the possible presence of either astigmatism against the rule or oblique astigmatism before the operation. The degree of the astigmatism is naturally dependent upon a number of conditions, that is to say, whether the section was a linear or a flap, location and length of the section or the manner in which the lens came out etc. Further analysis proves that the astigmatism which is found after complete healing is due to decrease in the corneal curvature in the vertical meridian and coincidently to an increase in curvature in the horizontal meridian and in the majority of cases the latter condition exceeds the former. The fact that an increase in the curvature of the cornea in the horizontal meridian occurs, is to be attributed to the fact (observed by Hess) that the so-called striped-shaped corneal clouding after cataract extraction is really the optical expression of a vertical fold formation of the deepest layers of the cornea. R. L. R.

### A Contribution to our Knowledge of Ophthalmia Hepatica.

PURTSCHER, DR., Klagenfurth. (*Archiv für Ophthalmologie*, Bd L., Ab. I.) The author discusses in an interesting manner a subject which was first satisfactorily opened up to us by the contributions of Baas and Hori. He gives a detailed clinical history of a case which he had under observation for a long time and where after the death of the patient he had an opportunity of observing the anatomical changes in the eyes. The characteristics of the disease may be enumerated as follows. The pathological changes are most marked in the conjunctiva and are seen in the form of xerosis which may go on and involve the cornea. The iris and finally the choroid may participate. Clinically the xerosis and hemeralopia are the most prominent symptoms, and both are doubtless due to nutritive disturbances. Keratitis usually precedes iritis but the latter may be primary. The changes in the choroid consists for the most part in hyperemia sometimes passing over into more or less intense inflammation with consecutive atrophy of the stroma and with sclerosis.

These latter symptoms give rise to a marked lowering of the central vision, narrowing of the fields for white and for colors, diminished light perception and finally disturbances in the color sense. It is interesting to note the fact that the most pronounced pathological changes in the cases which were reported, were located in the choroid that is to say, in that part of the eye which is richest in blood vessels. As regards the pathogenesis three explanations are worthy of consideration. First the general nutrition is lowered because bile no longer participates in digestion and as a result we have not only deficient blood supply, but deficient supply of nutritive material quantitative as well as qualitative. The general nutrition then is after all the factor which is most prominent. We know that disturbances in the general nutrition when kept up for a long time, may lead to hemeralopia a condition which is, as has been said, pretty constant in ophthalmia hepatica. Secondly: Baas has suggested that biliary acids may extract the visual purple, a property discovered by Kuhne. It is possible then that we have in this phenomenon an explanation of the diminished light perception. A third moment must be considered, namely the probable influence of bacteria. The author then proceeds to discuss at length the parasitic theory of the disease and speaks in this connection of metastatic ophthalmia, but comes to no satisfactory conclusion on this aspect of the subject. Lack of material is responsible for our want of knowledge as to the pathogenesis of ophthalmia hepatica. The treatment is simple though it does not offer much hope. The general nutrition is to be looked after and he suggests nothing which can be regarded as important in the way of local treatment. R. L. R.

### A Case of Traumatic Prolapse of the Lachrymal Gland.

HILBERT, DR. RICHARD. (*Klinische Monatsbl. für Augenheilk.* July 1900.) It will be remembered that about a year ago Ahlstroem published an analysis of five cases of this very rare affection. These were at the time the only cases which he could find in literature. It is clear then that the trouble is an exceedingly rare one. The case reported by Hilbert was that of a child one and a half years old who had fallen and struck his left eye against a bench. The parents said that the wound had bled a good deal and that after the accident they had noticed a piece of flesh protruding. Hilbert noticed in the region of the external commissure right beneath the orbital ridge a horizontal wound about 1 cm. long from the mouth of which protruded a round red body twice as big as a pea. The upper lid was ecchymosed. The protruding mass which proved to be the lachrymal gland was excised and the wound closed with sutures. It is rather remarkable that traumatic prolapse of the lachrymal gland has only been observed thus far in children and that too in very young children. In one case only had the child reached the tenth year. Ahlstroem thinks that the reason for this lies in the fact that in children the suspensory ligament of the lachrymal gland is more yielding than in adults. Hilbert however is of the opinion that the orbital rim in children is undeveloped and consequently is less able to protect the contents of the orbit than in later life. It is a well known fact that the eyes of children are more prominent than those of adults, due no doubt to incomplete development of their surroundings (i. e., orbit). R. L. R.

### The Transmission of an Irritation from one Eye to the Other. An Experimental Study.

WESSELY, DR. KARL, Heidelberg. (*Archiv. f. Ophthal. Bd. I., Ab. I.)* We all know that the ciliary nerve theory of sympathetic ophthalmia is based upon the assumption that a condition of irritation in one eye may be transmitted to the other. The author has endeavored to prove this problem. He reviews the works of Grünhagen, Jesner, Bach and others. It will be remembered that these observers found that when the cornea was cauterized and at the same time the ophthalmic division of the fifth wounded, fibrin and an increased amount of albumen were poured out into the anterior chamber, and this took place not only in the eye which was cauterized but also in the fellow eye. It is well known that the normal aqueous is free of fibrin. The question is whether this fibrin and increased amount of albumen in the aqueous of the other eye can be regarded as evidence that the irritation has reached this eye by way of the vaso motor nerves. He first makes very exhaustive experiments to determine the normal amount of albumen in the aqueous of rabbits. This he determines satisfactorily and finds that it ranges from .020 to .025

per cent. He then proceeds to the main part of his work. He performs thirty-two experiments. His plan was to cauterize the cornea entirely across at its scleral border with silver nitrate and then neutralize with salt solution to prevent spreading into the surrounding tissues. In a number of the experiments the aqueous was let out and tested before application of the caustic in order to compare it with the aqueous after the caustic was applied. Sometimes either a one per cent sublimate solution was dropped into the sack or a four per cent solution of formol or the cornea would be irritated perhaps for ten minutes with the faradic current, and finally a staphylococcus ulcer was produced, but in not a single one of these instances was there observed any increase in the amount of albumen in the aqueous of the fellow eye and the same may be said when the iris was directly irritated. He concludes then from these thirty-two experiments that the vessels which secrete the aqueous do not allow any fibrin nor any more albumen to pass through and that a transmission of the irritation to the other eye does not take place. Thinking, however, that the slight change in the vessel wall might be an obstacle to the diffusion of the albumen he chose a more readily diffusible substance, namely, fluorescin, which in increased quantity would probably pass more readily through the vessel wall. He injects a five per cent solution of fluorescin kalium into the ear vein (usually from 1/3 to 1 cm.) and then proceeds to cauterize the cornea as before. Seventeen experiments were performed and on twelve of these no deviation from the normal was observed in the other eye. In other words, there was no enlargement of Ehrlich's line nor apparently any exit of fluorescin from the pupil. He concludes from this last series of experiments that his earlier experiments are vindicated.

R. L. R.

### Pemphigus of the Conjunctiva.

MICHEL, PROF. V., (*Zeitschrf. f. Augenheilk, Juni*, 1900.) The author mentions the varieties of pemphigus usually described in books on dermatology namely, pemph. neonat., pemph. acutus, foliaceus and vulgaris, and calls our attention to the fact that the latter variety affects almost exclusively the conjunctiva, and may well be called a mucous membrane pemphigus. The pemphigus vesicles are seldom found on the skin of the lid. Pemphigus of the conjunctiva shows itself under four forms: 1. The form where the disease is confined exclusively to the conjunctiva. 2. That form where the disease attacks not only the conjunctiva, but also the mucous membrane of the nose, mouth and pharynx. 3. Where the disease is known as pemphigus universalis, and attacks not only the conjunctiva but spreads to other mucous surfaces and where the pemphigus vesicles are seen upon the epidermis. The clinical picture of the conjunctival pemphigus corresponds in general terms to that of pemphigus of the mucous membrane. As regards the diagnosis of the affection v. Michel emphasizes three points: The manner of its appearance, the location and finally its course. Under the first head he reminds us that the formation of the vesicles occurs with extreme rarity on the conjunctiva, and instead of the vesicles, one sees in the inflamed area membranous exudates, grayish white in color and of various size. As to the location there are two points, first at the inner lid angle and just behind the punctum (above and below) at the point where the conjunctiva passes over on to the skin, and the other point is the lower half of the scleral conjunctiva and removed from the corneal border. As regards the course of the disease cicatrization is the rule. The author then goes on to give the various modifications of the clinical picture and reports six cases. As to the etiology of chronic pemphigus we seem to be in the dark. Neither the examination of the urine, of the blood nor of the contents of the vesicles throw any light upon this aspect of the question. He then speaks of its pathological anatomy, which I need not recount. As to its diagnosis he thinks we are safe in pronouncing it pemphigus if we are sure the above mentioned points are attacked and if we are sure that the process is not due to the effects of a caustic, trachoma or diphtheria. The prognosis is unfavorable. The author uses borated vaselin with which is mixed a little cocain.

R. L. R.

### The Unpigmented Naevus of the Conjunctiva.

HIRSCH, CAMILL, Prague, (*Zeitscrf. f. Augenheilk.* July, 1900.) The author reminds us that in spite of the frequent occurrence of pigmented spots in the conjunctiva their histology has not been thoroughly worked out. In this connection Wintersteiner may be said to have done most systematic work and his communication may be regarded as the pioneer one of importance. Hirsch gives in minutest detail the histological changes found in a growth removed from the conjunctiva of a girl seventeen years old. The clinical history of the growth as given by the girl was unsatisfactory. It was reddish looking and caused an itching sensation. It is not necessary to go into the anatomical examination. In many respects the changes in the tumor corresponded with those observed and described by Wintersteiner. He regards it as a characteristic structure, sui generis, and it can be identified under the microscope wherever found in the body. One can recognize with tolerable certainty that it has an epithelial origin from the character of its elements, from their arrangement, and finally from the location of the growth. He emphasizes the fact that the growth always lies in the layer immediately beneath the epithelium and that no naevus has yet been observed which had its seat deeper than the subepithelial layers. The clinical significance of these growths lies in the fact that they are the starting points of sarcomata. Naevi are found with the same frequency in all parts of the conjunctiva while the sarcomata are found five times more frequently in the region of the lid opening than in any other part of the conjunctiva. Wintersteiner found that in one hundred and sixty cases, one hundred and thirty-three were located in the opening and only twenty-seven in other parts of the conjunctiva. The reason for this is, that the naevus when situated in the opening is constantly exposed to injuries from without and thereby takes on a malignant character and at once begins to grow. This tendency then to become malignant is sufficient reason, the author thinks, for the speedy removal of conjunctival naevi, especially when they are situated in the dangerous zone, so to speak. R. L. R.

### Rodent Ulcer of the Cornea.

HILLEMANS, DR., *(Archiv. für Augenheilk, Bd. XI. Ab. I.)* The author gives us an exhaustive study of three cases of rodent ulcer which he has seen, together with thirty cases observed by others. The disease is, as we know, rare, its chief characteristics being its marginal origin, the gradual progress with intermittent symptoms of irritation, the gray floor of the ulcer showing toward the healthy cornea an undetermined line of demarcation, and the rather slow extension around the border of the cornea with relatively slight involvement of the deeper parts, until finally in the majority of cases the entire surface of the cornea is broken down. Another very characteristic symptom is the repair and reproduction of the epithelium which follows close upon the above mentioned symptoms. On the border of the ulcer the epithelium will be found much undermined. Hypopyon is seldom present, and never in the beginning. Plastic iritis is usually seen. Perforation on the other hand is rarely observed. After recovery it will be noticed that that part of the cornea which has been involved, and which is now thinned, is devoid of sensation. From this thinning, clouding and anaesthetic condition one can make a diagnosis of old rodent ulcer, for no other disease produces similar changes. The author does not take into consideration the possibility of its being a parasitic affection. He found thrombi in the remote branches of the ciliary veins. The death of the upper corneal layers leads the author to think of an affection of the nerves governing the nutrition of the cornea. He is in favor of warm applications and atropin, and mention is made of subconjunctival injections, touching with carbolic acid, and also with tincture of iodin. R. L. R.

### Two Cases of Conjunctivitis Vaccinalis.

PIHL, DR. A., Gothenburg (Sweden). *(Klinische Monatsbl. für Augenheilk.* July, 1900.) The first case was a child of two and a half years who had been recently vaccinated and who since that time had been fretful and feverish. When seen the arm was very much swollen and a typical vaccination sore was present. ·She had been inoculated on the right arm. The right eye was closed and there was an abundant secretion between the lids. The upper lid was enormously swollen hard and overlapped the lower lid. On everting the upper lid there was to be seen about 3 mm. from the free border and right in the middle of the lid and situated in the conjunctiva a vesicle the size of a pea which when opened showed an ulcer coated with a bloody purulent material and rather shallow, and having a rather hard mottled base. This efflorescence was quite isolated and there was nothing like it anywhere else about the eye. The bulbar conjunctiva was very chemotic but not much reddened. The cornea was normal. The conjunctiva of the lower lid was swollen and red. The condition remained unchanged for two or three days and then commenced to improve and in ten days had disappeared leaving scarcely a trace. The treatment consisted in cooling applications, irrigations with mild sublimate solutions and the application of a sublimate salve (10,01 : 30,0). The second case was also a child, four years of age, who had been recently vaccinated and whose arm presented the characteristic sore. The right eye was the one which was affected in this case and its condition did not differ materially from the eye in the first case except that the vesicle was more angry looking and more suggestive of its probable origin. The condition got well with the same treatment as was followed in the other case. The author then discusses the probability of its being due to a different kind of infection and having no connection whatever with the vaccination such for instance as herpes, either of venereal or tuberculous origin. He thinks however that the source of the infection is pretty clearly established. He alludes to the fact that there are only six cases in literature which are exactly similar to his case.

R. L. R.

### The Treatment of Infected Perforating Wounds of the Eye Ball.

GLAUNING, E., Erlangen. (*Münch. med. Wochenschr.* No. 31, 1900.) The author who has made his observations in the clinic of Prof. Eversbusch has come to the conclusion that the so called conservative treatment of this class of injuries deserves wider acceptance or approval than is usually given it. He mentions a number of cases which under the old régime would have been treated by enucleation but which treated under the new system originated by Prof. Eversbusch about ten years ago, resulted in the preservation of the eyeball. The method to which he especially calls our attention is that where the galvano-cautery is used. The treatment is as follows. The point is heated to a red heat and is applied to the cornea gently passing through the latter, layer by layer till the anterior chamber is reached and a small stream of aqueous flows out. It makes no difference whether hypopyon is present, the method is indicated except that any active evacuation of the contents of the anterior chamber should be omitted. If the corneal wound is linear and lengthwise the peripheral end of the wound should be selected for the cauterization and if there are several small wounds the application should be made to the most convenient spot. The conjunctival cul-de-sac should always be flushed with a physiological salt solution and a compress bandage applied. If there is any pain an ice bag should be applied over the bandage. If the inflammatory symptoms increase after this measure and hypopyon shows itself again, the paracentesis should be repeated in two or three days. The author then reports three very striking cases in which this method was employed. In all three cases the wounds may be classed as desperate and the results may be regarded as satisfactory so far as a shapely eyeball was concerned. The paracentesis with the galvano-cautery owes its value to several factors. The fistulous opening which is established allows the inflammatory and infectious matter which is in suspension in the aqueous to flow out, such for instance as the fibrin, the exudates and precipitates all of which are undoubtedly irritating and infectious in character. This filtering process is going on all the time and the eye is thereby relieved of much that is distinctly hurtful. Another useful factor in the production of good is the lowering of intraocular tension and as the tension is lowered we know that fresh and pure blood pours into the coats of the eye and through this condition alone better circulation and metabolism are brought about. R. L. R.

### Spontaneous Intraocular Hemorrhage leading to Rupture of the Eyeball.

HAUENSCHILD, DR. W., Würzburg. (*Münch. med. Wochenschr.* No. 31, 1900.) The patient was a woman of twenty-eight years. She had had several times, severe attacks of nose bleeding and on one occasion it was noticed that her eyes were markedly protruding. On the day when the bleeding occurred she had been feeling very tired though no symptoms had been referred to the eye. In the afternoon she took a walk with her parents and on her return she was seized with a violent pain in her right eye. The next day there was widespread subconjunctival and subpalpebral ecchymosis and slight exophthalmos. The anterior chamber was entirely filled with blood and concentric with the upper border of the cornea a blackish band was observed. Amaurosis. When the blood was nearly absorbed it was seen that the upper part of the iris was lacking and that it lay in a point in the sclera which had ruptured. The point of rupture was about 1 mm. above the corneal border running 6 mm. concentrically with the latter and then taking a backward course at almost right angles. The blood was absorbed and the eye shrunk. No change was ever noticed in the other eye. A careful examination of the general condition threw absolutely no light upon the etiology of this strange phenomenon nor does the author attempt to suggest any explanation for its occurrence. R. L. R.

### The Cataract Operation.

Pagenstecher, Prof., Wiesbaden, (44 *Jahresbereich der Augenheilanstalt für Arme.)* The cases operated upon with iridectomy were about equal to those with the simple extraction. Usually the behavior of the iris after the opening of the anterior chamber was the guide whether iridectomy should be done. If the iris showed no disposition to retraction the iridectomy was always performed. As regards the after treatment: After the extraction pure ichthyol was spread over the lids and over this a piece of gauze saturated with liquid paraffin was laid and on top of this a piece of cotton. Pagenstecher has noticed the absence of irritative symptoms with this bandage. The bandage is kept in place by a wire shield fixed in specially devised spectacle frames. This shield has been used with success for ten years. The ichthyol is removed from twenty-four to forty-eight hours and only replaced in cases of marked irritation and secretion. The shield is allowed to remain for the first fourteen days. Pagenstecher does not believe in the so called open treatment of cataract patients.

R. L. R.

### A Report of Seven Extractions of Intraocular Cysticerci.

Schmidt-Rimpler, Prof. H. *(Zeitschrf f. Augenheilk,* August 1900.) The author gives us an interesting resumé of this subject and calls our attention to the exceeding rarity of the trouble, at the same time analyzing the results of operations which have been reported by Albrecht, v. Graefe, Hirschberg and others. He reports seven cases in which he operated, and all seven operations were successful. An accurate ophthalmoscopic examination was always made before the operation in order to locate with accuracy the position of the cyst. This is important as it was noticed in two important cases the position of the cysticercus had changed from that of the day before. In order to mark precisely the point where an entrance should be made he passes a black thread deep in the sclera. He makes the incission with a small Graefe's knife cutting slowly through the several layers of the sclera and choroid, and in this way he avoids injuring the parasite in case it has a subretinal position. If the cyst is located in the vitreous he passes at once through the coats of the eye always using a sawing motion in order not to injure the vitreous body, and in two cases the parasite came through the opening made in this way. If it does not come out, one must make an examination with the ophthalmoscope. He severs the muscle just as he does in any ordinary tenotomy, secures the ends with fine sutures which will allow him to re-insert the muscle ends in the proper places after the parasite is delivered. After the operation the conjunctival wound is brought together with sutures while the scleral wound closes of itself. The wounds healed rapidly and the patients were discharged with eyes free of inflammation. In six of the cases before the operation the vision was practically worthless on account of vitreous opacities and retinal detachment. In one of these cases there was no change in the vision, in two cases there was slight improvement, in two cases the vision became somewhat worse. In one case vision rose from $^1/_{12}$ to $^1/_4$. In four cases the parasite was in the vitreous and three times in the retina. It is rather remarkable that in those cases where the parasite was beneath the retina this part of the retina after the operation became attached and remained so while other parts remained detached as before. Two of his cases had tapeworm. Since all eyes with cysticerci sooner or later are destroyed, either by phthisis bulbi or by purulent inflammation, the indications for operation are strong, especially as we may hope to obtain an eye free from inflammation and in some cases with useful vision. The author closes his report with a discussion of the question of the possibility of an outbreak of sympathetic ophthalmia in case the parasite be allowed to remain.

R. L. R.

### The Causes of Primary Iritis: A Statistical Study.

VON MICHEL, PROF., Berlin. (*Münch. med. Wochenschrf.*, June 19, 1900.) The study was directed to the following considerations: First, to those cases of hereditary tuberculosis where the iris and the eye generally showed a tendency to participate, and finally those cases where there was no evidence of tuberculosis in other parts of the body. Secondly, to iritis in cases of probable or certain tuberculosis of the lungs, lymph glands or of other parts of the body. Iritis in cases of either probable or certain nephritis. Iritis in diseases of the circulatory apparatus. Iritis in syphilis, and finally iritis in general affections. Under each of these heads he analyzes a number of cases of iritis, eighty-four in all. The following points of interest are to be noted: Women are more prone to the disease than men. The disease is frequently one-sided. The average age is about forty. Chronic nephritis was found in twenty-nine cases and tuberculosis in thirty-one cases. Disease of the circulatory apparatus was found in thirteen cases, syphilis in five cases and other diseases in six cases. One must be struck with the small percentage of cases associated with lues. We might conclude from this that primary iritis exists exclusively with a general affection, hence the importance of making an examination of the condition of all the organs of the body, especially of the kidneys. R. L. R.

### The Question of Amblyopia Ex Anopsia.

HERRNHEISER, DR. (*Wochenschr. für Ther. und Hygiene des Auges*, den 12 Juli, 1900.) The author reviews the literature of this subject and adds another case to those reported by Johnson, Klein and others. The case is as follows: The child (a lad eleven years old) had been struck in the left eye with a piece of wood. The result was a penetrating wound of the cornea and a traumatic cataract. This eye had always been, so to speak, his seeing eye, the other eye being a strongly converging one and having very poor vision. The examination showed for the latter eye a vision which amounted to the ability to count fingers at one and one-half meters, eccentric fixation, outer limits of visual field normal and color sense normal. The media were clear and there was hypermetropia of about 2D. In the wounded eye there was pronounced ciliary injection, wound of the cornea and incarceration of the iris, and traumatic cataract, with only a small area at the lower and innner quadrant which was transparent. The vision of this eye was fingers at four meters. On removing the bandage the eye was at once used for fixation. As the lens in the wounded eye was daily becoming more opaque, tests in seeing were made with the other eye, and in two weeks the vision had risen to the ability to count fingers at four meters. Central fixation was not present. In three months the vision was six twenty-fourths (6/24ths) and with convex 2D he could read Jaeger No. VI. From the operated cataractous eye a vision of 6/60ths with convex 10D was obtained. A year later when the boy was examined his right eye (which had gone on improving in vision) had a vision of 6/9ths, and he could read Jaeger No. 1. without glasses. The author regards this case as strong evidence in favor of adopting the measures laid down by Priestly Smith at the IX International Congress with regard to the treatment of strabismus in children, namely, to tie up the good eye at regular intervals and thus to compel the patient to use the squinting eye. In this manner amblyopia ex anopsia may be prevented. R. L. R.

### Experiments to Determine the Nature of the Cataract and Other Changes Produced in the Eye by the Electric Shock.

KIRIBUCHI, DR. K., Tokio. *(Archiv. für Ophthalmologie.* Bd. L. Ab. I.) The author made a series of experiments, fifty-four in all, to determine the effect of the electric shock upon the eye. The shocks were applied to the supraorbital region and were given from one to eight times at short intervals. The effect of the first shock is to produce violent convulsions, which may be followed by stupor. Muscular twitchings over the entire body and dyspnea are often seen. The author then proceeds to describe in detail the clinical history of the animals which he experimented upon. He sums up his work with these conclusions.

1. After a few hours the lens shows beginning clouding which may involve a small area as for instance one side, then again the whole anterior surface may become cloudy. This clouding, however, is usually transient where there is only slight and passing hyperemia of the iris and ciliary

body. At other times total cataract is to be seen which is to be regarded as the result of disturbances which have their origin in the intense hyperemia of the iris and ciliary body. 2. In the cornea, the epithelial cells, stroma cells and endothelial cells suffer first of all, and later on the picture resembles that of a parenchymatous keratitis. 3. The conjunctiva shows intense edema and marked dilatation of the blood vessels, which conditions however are transient. 4. Circulatory disturbances, considerable in degree are seen in hyperemia of the uveal tract, and these disturbances may lead to degeneration of the ciliary body and its processes. The choroid is usually intensely hyperemic. 5. Atrophy of the retina and of the optic nerve are to be regarded as resulting from the changes in the choroid. 6. As to the genesis of the changes in the eye following the electric shock the author places first the electrolytic action and second the action of the ultraviolet rays.

R. L. R.

### The So-Called Paradoxical Pupillary Reaction.

Silex, Prof., Berlin. *(Zeitschr. für Augenheilk.* Juni, 1900.) By this phenomenon is meant the condition where the pupil instead of contracting as it does normally when the light falls upon the eye dilates more or less rapidly. The author gives an historical survey of the subject from which we learn that the observations are few. He reports a case which he saw a year ago. The case was that of a woman fifty-two years old who had been injured in the back of the head several years previously. She was nervous and weak. Her general condition is described at length by Silex and it is sufficient to state that her pupils would at once dilate under the influence of bright light. When the test was made great care was taken that the patient did not accommodate. There was no hippus. It may be well to state here that syphilis, tabes, paralysis and any organic nerve affection which Fränkel regards as usually the cause of the condition were absent in this case. Lepine compares it with the phenomenon which is sometimes seen after a course of quinin or salicylate of soda. Teissier mentions the fact that sometimes in the infectious diseases an inversed temperature curve will be noticed. Money and Hirsch interpret it as a sympathetic reaction. Silex mentions the various theories and refers

to the conditions which may possibly be
for instance hippus, and the case where
able to dilate his pupil at will. His cas
be explained by any of these theories.
in his case it might be due to irritation
mation of dense layers of connective
have formed at the point of injury after
be regarded too as a persistence of t
pupil for near work. Increased excita
resisting powers of the entire nervous
quently of the pupillary fibres. When li
an eye we have rapid exhaustion of the
lition of function with a coming into p
fibres. As a proof of the tenableness o
creased excitability or irritability and as
ished function, he cites the fact that
lamp light can read the same print som
than by the usual room illumination wh
ion under the first condition is somewha

### A Case of Typical Toxic Amblyopia cau Santonin.

INOUYE, M., Okayama, Japan. *(Die Klinik*, 20. August, 1900.) The case w
thirty-three years old who had suffere
with liver trouble and polyarthritis. He
store and gotten a powder which he had
day when he awoke everything looke
symptom did not disappear for three da
a visual disturbance in the right eye.
consisted in a blurring of the outlines of l
nosis was made of acute retrobulbar neur
He was odered to take two doses of
(twenty grains each) at bed time. Near
all the unpleasant symptoms had disappe
use his eye as well as ever. A careful e
powder known as "semen-yen" showed

### Sachs' Disease. Amaurotic I

MOHR, DR., Budapest. *(Archiv für*
Bd. XLI, Heft 3—.) Sachs of New Yor
number of cases where these two condi
in which the subjects are children. The

condition is quite characteristic. In the region of the yellow spot there will be seen a broad white round spot having a dark brownish red centre. This condition is associated with general weakness, incapacity for locomation and terminates fatally. Generally several children in the same family are attacked. The chief symptoms are as follows. 1. Mental defects leading up to actual idiocy. 2. Weakness of all the extremities leading up to paralysis. 3. Reflexes normal or they may be either diminished or intensified. 4. Decline of vision even up to blindness. Atrophy of optic nerves. 5. Marasmus. Death before the end of the second year. 6. Several children of the same family are frequently affected. The disease is a well defined one. The child comes into the world normally and is apparently normal till the end of the first year when wasting commences. The extremities become weak and paralysis and amaurosis set in. Both eyes show the characteristic changes in the macular region consisting of a white spot with a cherry red centre. Anatomical examination shows edema of the macular region, growth of the ganglion cell layer and atrophy of the nerve fibres.

R. L. R.

### Extraction of Cataract from the Second Eye after Loss of the First One.

MENDEL, DR. F., Berlin. *(Prof. Hirschberg's Clinic, Berliner Klin., Wochenschrift,* No. 24, p. 523, 1900.) Patients who have lost one eye by cataract operation, generally go to large medical centers, like Berlin. They require a careful examination of the whole body as well as of the eyes, in order to find the reason which may have caused the failure, so that it may be avoided at the operation on the second eye. Such reasons may be: very large cataracts nigra necessitating a large section, the conditions of the conjunctiva, lachrymal apparatus and nose, which may disturb aseptic healing and therefore call for special treatment. But even after protracted treatment of the nose M. recommends the closure of the canaliculi by galvano-cautery four to six weeks before the operation. Extirpation of the lachrymal sac is reliable, but it is a greater encheiresis than the extraction itself. Combined extraction, i. e. with preparatory iridectomy in such cases is much more preferable than simple extraction. According to these principles the second ey were successfully operated on for cata eight years; the clinical histories are g

### After Treatment in Operations on the Eye strations of Patients.

GUTMANN, DR. G., Berlin, *(Ibid.*, p. 5 of better hygiene and greater comfort ( straint, so far imposed on patients aft with regard to bandages, confinement t room. The eye is dressed according Fuchs and covered with the wire ma From the second day, i. e., after the wo epithelium, the dressing is left off and wire mask, covered with black cloth, is ance with Czermak, Praun and Wol cleansing effect of the movements of t which conduct the stream of tears (ac according to the investigations of Marten with it the morbid germs into the nose. pressure bandage, where its therapeuti as for resorption of hemorrhages in the after glaucoma-operations or in exu retina, or if the movements of the lids n the closure of the lips of the wound, as in patients with very wide palpebral fi feeble minded persons. Czermak re under the wire mask in people who op so that the upper lid border passes o wound, in lower sections and after pr The results were excellent, no crusts itching and less injection. Liquid die day. The patients sat in chairs from Finally G. gives in detail the clinical hi successful discission and extraction of cataract in a deaf mute with retinitis pi came delirious for several months fr effect of the dark room. This and anoth for G. the reason not to darken the roo tions, but only to exclude bright light.

### Is there an Amblyopia Ex An

SILEX, P., PROF., Berlin. *(Deutsc*

*schrift*, No. 24, pag. 383, 1900.) After a short historic review of the development of the theory of amblyopia ex anopsia, S. gives the following resumé: Strabismus, by exclusion of binocular vision, entails impairment of sight which is progressive and corresponds to the duration of strabismus, and vice versa: the amblyopic eye disturbs binocular vision, therefore it is closed and it squints. S. however remarks that visual tests, made at regular intervals, which would show a gradual decrease of sight, are still wanting. The theory was based on numerous speculations to the end that, in consequence of exclusion of binocular vision, a lack of physiologic development of the juvenile eye and the visual center occurred. Nobody has seen this, and it cannot be proved. Secondly it was based on certain cases in which the sight decreased after strabismus set in, and improved rapidly after squint operation. S. however thinks that probably errors in the functional examinations may have occurred. Schweigger energetically protests against the assumption of amblyopia ex anopsia, as the amblyopia is either congenital or due to weakness of accomodation, and there is no proof that an eye with good vision has become amblyopic by strabismus. There is no such thing as impairment of function by strabismus. An eye, which will squint later on, is not excluded from seeing but receives innumerable retinal impressions and is kept in exercise, and if the visual act functioned normally up to the 2nd, 3rd or 5th years, the general time of commencement of strabismus, S. thinks it cannot be altered, if the media are clear and no cerebral defect occurs. The frequency of amblyopia is not astonishing considering the high percentage of retinal hemorrhages in the newborn from which amblyopia without anatomic changes may easily develop. These amblyopic eyes remain in normal position for some time, but under the influence of accommodation, muscular preponderance, growing of the orbit or other causes, they deviate later on or not. If we consider amblyopia as a cause of strabismus, its high percentage in squinting eyes will not be surprising. Therefore no improvement of vision is to be expected from separate exercises of the amblyopic eye, never more than that found at the first examination after careful correction of refraction, eventually with the aid of eserin. S. observed this in quite a number of cases, tested at regular intervals after the operation. The fact that many eyes, squinting from earliest childhood, have good vision, is of greatest importance as it repudiates the opinion that V. becomes worse the longer strabismus exists. S. could never observe such a reciprocal relation between V. and strabismus, and therefore denies the existence of amblyopia ex anopsia. Its assumption is of great practical importance, as the opponents may operate upon children for squint at any time according to their choice, its advocates would have to operate at once after the occurrence of strabismus, but S. does not know of anybody who would do this. A few cases in support of his views are given in detail. C. Z.

### Enucleation and its Substitutes With Especial Regard to Sympathetic Ophthalmia.

SCHMIDT-RIMPLER, PROF., H. Goettingen. (*Deutsche Med. Woch.* No. 27, 1900, p. 429.) At the the eye clinic in Goettingen 160 enucleations were performed, from 1900 on: for phthisis bulbi 37, old trauma 42, recent trauma (1 to 2 days) 8, tumor 39, glaucoma 10, staphyloma 13, cyclitis 7, irido-choroiditis 4.

149 exenterations for commencing panophthalmitis, i. e., purulent choroiditis 7, old trauma 101, recent trauma 24, phthisis bulbi 4, staphyloma 9, cyclitis 3, purulent corneal infiltration with suppuration of the vitreous 1.

26 optico-ciliary neurectomies, for chronic irido-cyclitis after trauma 24, phthisis bulbi 2.

The time for healing was shortest after enucleation, longest after optico-ciliary neurectomy in corresponding cases. Sympathetic inflammation subsided after enucleation in 4 cases, with good vision, in 5 the eye was lost. S. warns against iridectomy in sympathetic plastic irido-cyclitis with extensive synechiae of the whole surface. If sympathetic irritation lasts any length of time, S. removes the first eye, when blind or apt to be blind. If there is hope of restitution of V., S. uses inunctions of mercurial ointment and subconjunctival injections of salt solutions. In some cases sympathetic ophthalmia occurrred three or four weeks after enucleation, and even later after neurotomy or neurectomy, after exenteration within the first week. The latter may be explained, according to the ciliary nerve theory, that the intra-scleral ciliary nerves are preserved. From his therapeutic observations S. concludes that enucleation is the safest operation for prevention of sympathetic ophthalmia; in a few cases he had to resort to it after exenteration or optico-ciliary neurectomy on account of pain. Exenteration is always indicated in suppurative choroiditis, even if panophthalmia has not set in, as fatal meningitis has followed enucleation in such cases, although S. never met with it. In these purulent processes S. prefers exenteration to enucleation even if sympathetic ophthalmia is established, although otherwise he considers enucleation as the only operation for the latter. His method is similar to that of Bunge: Puncture and contrapuncture in the sclero-corneal junction in the horizontal meridian behind the iris, formation of a corneal flap upward, the lower half is removed with forceps and scissors. Exenteration with Bunge's spoon, closure of the sceral and conjunctival wound by three sutures. The latter are removed on the 6th or 10th day. The indications for optico-ciliary neurectomy are very limited, it may only come in question if sympathetic ophthalmia is not likely to occur, never if a foreign body is present. It has no cosmetic effect, if deeper cyclitic processes leading to shrinkage exist or after injuries disposing of them. C. Z.

### On the Examination of Pupillary Reaction with Regard to Refraction. On Central, and Peripheral Pupillary Reaction, with Description of a New Instrument.

WOLFF, DR. HUGO, Berlin. (*Berlin. Klin. Woch.* No. 28, 1900, p. 613.) If we wish to obtain an exact reaction of the retina to light, a distinct and well defined image of the source of light must be focused on the retina. To that end the light must be placed before the eye with regard to refraction. The pupillary test consists of a tube with a convex lens of 25 mm. focal distance at one end, above that a diaphragm of 8 mm. aperature, and above this a plane mirror 45° inclined to the horizon. Before the mirror is a small tube of 8 mm. aperture. In the first tube is a movable shaft with a 12 volt lamp, and a mark shows the position of the lamp in the focus of the lens for the emmetropic eye. Thus parallel rays emanating from the lens are reflected from the mirror into the eye and are united in a sharp image of the glowing loop. An ametropic patient puts on his correcting lens, or he adj he sees the loop sharp in the mirror. the apparatus must be held at a distan eye. The pencil of rays is wide enou the pupillary movments and so narr is illuminated, with exclusion of any the eye through the sclerotic. This distinction between peripheral and action and is very useful for the hemi tion.

### Argentamin in Affections of the

IMRE, DR. JOSEPH, (*Ungarische B heilkunde*, Wien, Bd. II, 1900.) I. use tion of argentamin in catarrhal and junctivitis and trachoma. It was w cases complicated by corneal ulcers tamin is of alkaline reaction, has a power than nitrate of silver, passes tissues, is not irritating and rapidly d and secretion. In blennorrhora it has 2 per cent solution of nitrate of silver pain, and is applicable in any stage, membranes exist. It has the advanta plied two or three times daily. I. reco infections, especially the follicular fo good results from it in chronic tracho

### On the Action of Euphthalmin

WOSKRESSENSKY, I., St. Petersburg vestigations from the eye clinic of (*Wochenschrift für Therapie und Hy* No. 36.) W. recommends 5 per cent almost the same results as 10 per cent tion (one and a half hours less). T vestigations is: 1. Mydriasis sets in duration is short in comparison to Paresis of accommodation is slight. pressure is not increased. (In chron bring on an acute attack of inflammat cently observed by H. Knapp. Rev thelium of the cornea remains intact. irritation or general intoxication oc vantages secure to euphthalmin a pro thalmologic practice.

SEIFFER, DR. W., Berlin. (Clinic of Prof. Jolly, *Berlin Klin. Woch.*, 1900, No. 30, p. 657.) A man, aged 49, of a nervously affected family, suffered from his 8th year, for 30 years, of typical hemicrania, which also was inherited by his children. Then, for 4 years, the attacks of hemicrania were associated with relapsing oculomotor paresis and paralysis, which has gradually become stationary for about 6 years. S. is inclined to explain this combination by disturbances of circulation in the nucleus or roots of the 3rd nerve, caused perhaps by auto-intoxication. This and similar cases published by Joachim and Paderstein show that a "migraine opthalmoplégique," as originally described by Charcot, really exists. Two figures illustrate the complete oculomotor paralysis. C. Z.

### On Primary and Traumatic Ribbon Shaped Opacity of the Cornea.

MANZUTTO, DR. GIUSEPPE, (from the Eye Clinic of Prof. E. Fuchs, Vienna. *Beitraege zur Auqenheilkunde Heft* 44, p. 1.) M. reports 5 cases of primary ribbon shaped opacities in otherwise healthy eyes, which are different from the well-known secondary (Leber) or atypical (Sellerbeck) forms which occur in glaucoma or iridocyclitis. The symptoms are: slow failure of slight, corresponding to the opacities which may commence as two separate spots at the temporal and nasal portions of the cornea near the limbus, and grow toward the center, where they unite, or vice versa. The opacity lies a little below the horizontal meridian, which corresponds to the half open palpebral fissure. It has a grayish or brownish color, is sharply defined and, through a magnifying glass, appears granulated, like a thin layer of sand interspersed with black or white particles. It develops slowly and remains stationary after a certain extent is reached. It generally affects both eyes, although not simultaneously. In only two cases was it observed in women. The oldest patient was 81 years old, the youngest 17, but generally it is met with at about 55 years. It is due to impaired nutrition of the cornea by senile involution, caused by senile atrophy of the limbus with subsequent involution of a portion of the marginal loops of the bloodvessels and the attenuation of the cornea in advanced age. To this predisposition come external influences, to

which the portion of the cornea not co
exposed, as evaporation of the nutrive f
tion of lime in the corneal parench
be changed in composition by gouty
ship). Or it may be due to senile alter
vessels (Leber).

If it occurs in perfectly normal eyes i
matic origin, and indeed rabbit's hairs
opaque portions which had been scrape
hat manufacturers. Fuchs observed it
dusted calomel in his eyes. The tre
scraping of the opaque tissue. The a
cent hydrochloric acid with neutralizat
carbonate of sodium cleared the cornea
precipitations. Iridectomy is indicate
acids fail in very saturated opacities a
show a tendency to increased intr
Twenty-three cases from literature are

### A Case of Paralysis of both Trochl

BLASCHEK, DR. ALBERT, Innsbruck. (F
of Prof. E. Fuchs, Vienna, *Beitraege zu*
Heft 44, pag. 25.) This affection is ve
tient, aged 52, fell from a ladder $1\,{}^{1}/_{4}$
sciousness for an hour; vomiting, no h
cerebral symptoms. Wound at left pari
healed within a few days. The next da
ing downward. All symptoms (position
images), which are described, were in
the theory of paralysis of both trochlea
considered as a fascicular paralysis in th
ner and caused by hemorrhage in the
anterius, where both IVth nerves cross
nearest together

### Spasms of Retinal Arteries in a Case prese
### Embolism of the Central Art

SACHS, DR. M., Vienna. (From the e
E. Fuchs, Vienna, *Beitraege zur Augenh*
pag. 34.) A man, aged 54, suddenly lo
left eye, after temporary obscurations v
ceeding months. Typical ophthalmos
embolism, disk very pale, its borders in

very narrow, partly covered by the grayish white opacity of the retina (around disk and at macula); the superior temporal artery shows interrupted blood column above the macula.

S. observed in the vein running downward marked pulsations at the margin of the small physiologic excavation. The corresponding artery divided into a temporal and nasal branch shortly below the margin of the disk, of which all were filled with blood. By continued observation very frequent circular constrictions of the end of the artery at the excavation could be noticed, which, like a peristaltic wave, traveled slowly in a distal direction as far as to the bifurcation, where it ceased. Above and below the constriction the vessel was filled with blood; the constricted portion appeared bloodless, sometimes, however, S. thought he saw a thin red thread in the white ring. The height of the ring varied, mostly it amounted to more than double the width of the artery. Sometimes the rings followed each other so frequently that the one had not reached the bifurcation when a second emerged at the excavation. Generally only one ring was visible and after half a minute another came. The velocity was 3 to 5 seconds from excavation to bifurcation, a distance of a little more than one-half diameter of the disk. Fuchs, who examined the case, also pronounced the phenomenon as spasm of the artery. Pressure on the globe seemed to increase the frequency of the spasms, and stopped the venous pulsation. Nothing but slight arterio-sclerosis could be found in the peripheral arteries. At an examination three days later the spasms had subsided. C. Z.

### Clearing of Opacities of the Cornea.

FUCHS, PROF. ERNST, Vienna. (*Beitraege zur Augenheilkunde*, Heft 44, p. 117.) F. observed in old corneal scars (after eczematous keratitis) fine transparent lines, which appeared black on bluish white ground, while blood vessels represent very fine gray lines in direct light, which become dark in transmitted light. Also the ramifications of both are different. F. supposes that this kind of clearing occurs only in eyes which still grow after cicatrization took place.

The growth of the cornea is interstitial in such a way that newformed fibres enter between the fibrillae of the cor-

nea. Since also the opaque portions
ipate in the growing process, new and
parent fibres arise in them, which a
on opaque ground. The experimenta
on rabbits, yielded, however, negati
position of the scars in the cornea th
separate, but only in the same pro
surface of the cornea grew, and th
other as well as to the center and per
remained unaltered. A cornea with
had grown a third within 3 months, l
by a third through a lens. Thus I
growth of the cornea in all its parts
of the eyes around a sagittal axis, wh
excluded. The observations of F. d
supposition of Knies, that the corne
the center toward the periphery.

# ABSTRACTS FROM FRENCH OPHTHALMIC LITERATURE.

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## Quarter Ending September 30th, 1900.

### The Follower of Daviel.

JOCQS, Paris. (*La Clinique Ophtalmologique*, July 10, 1900.) States through the efforts of his grandson, Alfred Pamard and P. Pansier, the writings of Pierre Francois-Benetze Pamard, (1728-1793) have been brought to light and published. Much light is thus thrown on an interesting character. He introduced several improvements in the method of operating for cataract, some of which were discovered apparently at about the same time by more than one worker. Pamard demanded of his patient quite a strict preparation in order to lessen the risk of any postoperative inflammation, which was at that period of time almost the rule. His incision included a length from one-half to two-thirds of the periphery of the cornea and was made at a distance of half a line from the edge of the sclerotic. He steadied the eye by piercing the cornea opposite the site of the incision with a sharp "pick."

He advised operating upon the patient during a reclining position instead of a sitting one. He described very clearly an operation for secondary cataract, which he employed with great success. His writings speak also of lacrymal fistula, which he treated by the introduction of seton. Strabismus is also alluded to.

### Ethmoidofrontal Sinusitis and Orbital Phlegmon.

BOURGEOIS, Reims. (*La Clinique Ophtalmologique*, July 10, 1900.) The case reported by Bourgeois was rather remarkable for its rapid onset and speedy cure. Six days before the author first saw the patient, there was some pain in the head and a discharge from the left nostril. These symptoms Bourgeois attributed to a coryza. Four days later the pain became severe, compelling the patient to go to bed. When seen by the author there was a temperature of 103.1°F. Visual acuity was reduced to one-fiftieth of normal. The eye was pushed forward, outward and downward. The ophthalmoscope showed a papillitis which was said to have been caused by compression of the optic nerve. An incision was made into the upper portion of the orbit from which a large amount of pus escaped. A drainage tube was introduced.

Two days later, upon removal of the tube, Bourgeois introduced a probe and found that the cavity extended into the ethmoidal cells. Fluid injected into the wound escaped through the left nostril. The cavity was cleansed with a one to two thousand strength solution of cyanid of mercury, and the tube was reintroduced. After this the sac was washed daily with a five or ten per cent. solution of protargol. In a little more than three weeks' time the wound was allowed to close. The patient's vision had arisen to one-fourth of normal.

The only etiological factor in this case that the author could find, was that the patient had returned two months before from Senegal, in which place he had spent two years' military service. While in that colony he had had several attacks of intermittent fever and dysentery.

### A Case of Primary Tuberculosis of the Conjunctiva.

LAGRANGE AND CABANNES, Bordeaux. (*Archives d'Ophtalmologie*, July, 1900.) It is rather remarkable that although judging from experiments, traumatism seems necessary before tubercle bacillis can gain entrance into the conjunctiva. Yet in but one case previously reported, has any physician elicited such a history from the patient as in this. In the present case a child was struck in the upper and outer corner of the left eye by the rib of an umbrella with which he had been playing. This produced a subconjunctival hemmorrhage and a great deal of swelling of the eyelid. Barely had this condition subsided when a companion struck the same spot with his fist. In a few days' time the eyelid became edematous and the preauricular glands commenced so swell. Ptosis developed and a submaxillary gland became enlarged. At this juncture the patient consulted the authors. Upon everting the eyelid about a dozen and a-half miliary tubercles were discovered. In general appearance, they resembled very closely the granulations of trachoma, except that they were probably more yellowish in tint.

About two weeks later the tubercular masses were converted into the type of ulcers that are so often described. Microscopic examination revealed the presence of giant cells and tubercle bacilli in the tissues. The submaxillary ganglion became necrosed and bacilli were found in the pus which it discharged. This pus produced no effect when it was inoculated into the guinea pig. The ulcers were curetted and massage with insufflation of iodoform was employed daily. In two months' time from that at which the disease was first noticed, the eye was apparently cured. Throughout the entire course of the disease, the child's general health did not appear to be affected.

### Pathogeny of Retrobular Colobomatus Cysts.

VAN DUYSE, Brussels. *(Archives d'Ophtalmologie.* July, 1900.) With one new case and a resumé of several previously reported ones, Van Duyse asserts that colobomata are associated with early lesions of the central nervous system. In the newly added case he characterizes the central changes by asserting that the lesions consisted in a combination of internal and external hydrocephalus.

One of the most interesting conditions found in the examination of the microphthalmic eye and the cyst, was that the layers of that portion of the retina which was in the cyst were arranged in reverse order. The author explains this by the theory of evagination of the ocular vesicle during the early stage of its development:

In conclusion, he states that a direct relationship exists between early encephalopathies and troubles of evolution of the embryonal ocular cleft expressed by the formation of colobomatous conditions (simple colobomata, colobomatous ectasia, colobomatous cyst), the different degrees of which depend upon the period and the extent of the encephalopathic lesion. The hypothesis of an accumulation of lymph after the dorsal ral tube accounts, he says, for the cases that are observed.

In the present case, beyond the mitis and the ectasia of the forebr colobomatous cysts that were due to the tions of the plate of the ocular vesicle.

### Neurofibroma of the Skin of the Ey

SNEGUIREW, Moscow, *(Archives d'(* 1900.) The patient seen by Sneguire twenty-four years of age. From early l a thickening of the skin of the left upp increased constantly until when seen formed a pendulous mass taking it forehead and the upper portion the up poral region. It extended somewhat and covered the front of the side of the f the mouth and as far back as the ear. herent.

The growth was sucessfully remov Examination with the microscope showe the group described by Recklinghause An interesting feature of the case was fibres in all stages of degeneration were goes a long way toward confirming the by Recklinghausen as to the morpho plasms.

### Paradoxical Action of Optic Neurotomy of the Ganglion Cells of the Retina du Quinine.

DRAULT. *(Archives d'Ophtalmolo* States that section of the optic nerve p trance of the central artery produces a ganglion cells of the internal layer o multipolar cells whose cylinder axes fo This degeneration is slow, being comp twenty days. Large injections of chlc quinine produce the same effect except ation is much more rapid, If the quinine, however, follows a neurotomy lose this rapidity of action. The lo elapses between the operation and the powerful is the effect produced by the latter procedure. If six days, for example, have elapsed, the drug seems powerless to act and the degeneration proceeds as if the operation alone had been done. He believes that it is probable that although the cutting of the nerve destroys the cells slowly, one of its first actions is to remove their sensitiveness.

### Glaucoma in the Orient.

DE WECKER, Paris. (*Annales d'Oculistique*, July, 1900.) Believes that the proportion of the number of cases of glaucoma as compared with other ocular diseases is about twice as high in Constantinople as it is in Paris. Considering the percentage of the different forms of glaucoma, the comparison between the two places is as follows: Acute: Paris, 1.7 per cent; Constantinople, 1.6 per cent. Chronic Irritative: Paris, 45 per cent; Constantinople, 4 per cent. Chronic simple: Paris, 18 per cent; Constantinople 29.6 per cent. Absolute chronic irritative: Paris, 17 per cent: Constantinople, 40.7 per cent. Hemorrhagic: Paris, 4.2 per cent; Constantinople, 1 per cent. Consecutive: Paris, 10.4 per cent; Constantinople, 20.5 per cent. Prodromes of glaucoma: Paris, 4.2 per cent; Constantinople, 2.5 per cent.

He has found that the far greater number of glaucomatous patients in the East is probably due to the constant endemic of ophthalmia, from which all of the natives suffer at one time or another. The large proportion of cases of chronic absolute and consecutive glaucoma is explained by the fatalistic nature of the people; diseases being allowed to proceed for long periods of time before any medical aid is sought.

In conclusion, the author states that: 1. In the East more than anywhere else, one should remember that the predisposing causes of glaucoma exercise their action with much greater promptitude than in France, and intervention therefore is necessary in many cases, as for example, in those of perforation of the cornea with attachment of the iris. 2. In the East particularly, one must not be led away by the false doctrine that chronic simple glaucoma is not curable by operation, and that medical treatment is the only form of therapy to be considered. Sclerotomy and iridectomy show their definitively curative actions particularly well in countries in wl glaucoma is so frequent: a statement firmed by those who practice in the I in the Oriental countries generally.

This second conclusion is particu account of the stand taken by so m erators against the operation of irid of chronic simple glaucoma, and the being agitated over the question by the procedure.

### Internal Tarsorrhaph

TERSON, Paris. *(La Clinique Op* 25th, 1900.) Recommends partial the relief of a great number of tro portion of the visual apparatus. He d into complete tarsorrhaphy, median ta and external tarsorraphy, and interna thorrhaphy. Each of these, he says, cation; but he seems to regard inte the operation of the widest applicabil consists in freshening the edges of tl tance of from four to five millimeters to the internal lachrymal points, and u with two sutures. The indications t operation, are ulcerated corneae f cicatricial ectropion, certain cases of acute ectropion. The field of operati course be extended in either direction necessary, and the united edges may l at a time as the condition of the eye p

### Albuminuric Retinitis followed b

JOCQS, Paris. *(La Clinique Ophtal* 1900.) Has already called attentio a certain form of hemorrhagic retiniti large number of hemorrhages scatte when accompanied with Bright's d strongly to a prognosis of glaucoma. diligent search should be made for an and even if this disease is barely disco cian should be forewarned as to impen

### Nutrition of the Crystalline

OVIO, Padua. *(Annales d'Oclistiq*

Ovio's experiments included injections of different coloring substances, all of them being such as were readily absorbed, sub-cutaneously, into the living orbit, vitreous and aqueous humours as well as into the aqueous and vitreous humours of freshly enucleated eyes. Studies were also made by direct staining of the crystalline lenses themselves. His experiments pointed to the absence of any special nutritive channels in the crystalline lens. This process he believes to be due to osmosis. Several times he was temporarily misled into thinking that certain portions of the crystalline lens were more deeply stained than others, but upon closer examination the appearance was found to be merely apparent.

### Operations upon the Orbit Through the Temporal Bone; Krönlein's Operation.

VALUDE, Paris. *(Annales d'Oculistique*, August, 1900.) Has performed this operation three times, once for the removal of an orbital angioma, and twice for the removal of orbital sarcomata. Of the latter, one of the patients suffered from a recurrence of the disease, which invaded the surrounding tissues. He says that if the eye is not removed during the operative procedure it passes through the stages of a neuroparalytic keratitis, though going on to recovery.

Section of the optic nerve led to papillary and retinal atrophy. He commends the operation highly, not only for the treatment of the class of cases mentioned above, but also for the removal of deeply seated foreign bodies. Even in cases requiring exenteration of the orbit, he has found that the enlarged opening gained by the temporary removal of a portion of the temporal bone is an advantage. Contrary to what might be expected, he has found that the resulting scar does not give rise to great disfigurement. The operation is easily performed; it enables the operator to save the globe of the eye at times when by the old method of operating this would be impossible; and it permits a thorough exploration of the orbital cavity.

### Tscherning's Theory of Accommodation.

NICOLAI, Nymegues. *(Annales d'Oculistique*, August, 1900.) Holds that the surface of the crystalline lens when the capsule is drawn tight has an equal curvature at all points, instead of an unequal one as maintained by Tscherning. He also claims that the lens under these circumstances becomes thinner, whereas Tscherning holds that during the accommodative act the lens becomes thicker. Nicolai is inclined to disregard the theory of Tscherning.

### The Connection Between Ocular and Dental Affections.

DESPAGNET, Paris. (*Recueil d'Ophtalmologie*, July, 1900.) Ophthalmologists, Despagnet says, are probably recognizing more and more the real connection existing between dental and ocular diseases. The anatomical relations between the two are so intimately connected, that it is apparent that diseased teeth should produce similarly conditioned eyes. The same periosteum which lines the orbital cavity extends to the alveolar border of the upper jaw: the mucus membrane of the mouth is in direct continuation with the conjunctiva. Many times the roots of the upper teeth extend directly into the antrum of Highmore, and from this situation disease frequently reaches the orbit through the thin partition of bone. The angular artery and certain veins run almost directly from one region to the other. The same general nervous supply reaches both, not only through the fifth pair but also through the sympathetic system. Amblyopia, he believes, of which he cites a case, amaurosis, corneal ulcers and inflammation in general, various forms of conjunctivitis, strabismus, cycloplegia; and in fact, troubles of almost every portion of the ocular apparatus, have been at times, clearly traced to the teeth, Usually, it is the upper teeth that require attention in these cases, but not always, as the lower ones are not infrequently to blame.

### Hysterical Ocular Syndromes.

KOENIG, Paris. (*Recueil d'Ophtalmologie*, July, 1900.) Hysteria, when it attacks the ocular apparatus, Koenig finds, may simulate practically any disease of the visual apparatus; a fact which renders its diagnosis not only extremely difficult in certain cases, but also very important at all times. Both the sensory and the motor functions are included in the category. Hysterical amblyopia usually appears as a concentric contraction of the visual fields, though this is not always the case. Hysterical amaurosis is at times quite difficult to differentiate from the true disease. In both the onset may be very sudden. The amaurosis resulting from disease of the two occipital lobes frequently commences with symmetrical scotomata which may be in the form of hemiopia, or horizontal or vertical hemianopsia. Hysterical amblyopia is frequently accompanied with clonic or tonic spasms of the eyelids. Hysterical amaurosis gives the patient but little inconvenience. Moreover, the amaurotic eye is blind only when monocular vision is attempted. Prism tests demonstrate the fact that with both eyes unobstructed, the vision of the supposed amaurotic eye is good. The blindness of hysteria is never absolute. The patient sees without being conscious of the act. The contraction of the visual field spoken of before, is usually bilateral in character but may be unilateral in type. Reversal of the fields for colors is rather a frequent symptom.

Hysterical ptosis is always caused by spasm of the orbicular muscle. The skin is not wrinkled, the frontalis muscle is contracted, and the upper eyelid hangs over the lower one: When raised it rapidly falls again. The hysterical motor affections of the eye are frequently associated with troubles of sensibility of the conjunctiva and the oculopalpebral region. Probably the most important diagnostic point in regard to the false form of ptosis is that the eyebrow is drawn down during the spasm, whereas in true paralytic ptosis the eyebrow is elevated. False ptosis may at times be accompanied with a paralysis of the members of the opposite side of the body. Up to the present time no cases of hysterical paralysis of the ocular muscles has been reported, the disease being in the form of a spasm or a contracture. Hysteria of the ocular muscles always affects the external rectus muscles. These may be the only ones involved, or disturbance of one of them may be associated with trouble of the internal rectus muscle of the other eye. The external rectus muscles may be in a condition of associated spasm with the orbicularis. Lastly, all of the extrinsic muscles of the eye may yield to the disease. Hysterical nystagmus may be distinguished by rapid, irregular oscillations that are separated by very short intervals of repose. The oscillations (like the other motor disturbances), increase when the patient's attention is called to them or when he attempts to fix his gaze. They may be made to disappear under the influence of suggestion. Mydriasis and miosis have both been observed. Usually, the iris reacts to light stimulus, but not always. Finally, the diagnosis in all of these cases must rest largely at times upon the presence and the nature or else the absence of associated symptoms.

### Amblyopia Caused by Peripheral Neuritis, Due to Autointoxication of Intestinal Orign Through Lack of Nutrition.

SANTOS-FERNANDEZ, Havana. *(La Clinique Ophtalmologique*, August 25, 1900.) During both the ten years' war and the late war for independence in Cuba the number of cases of amblyopia due to retrobular neuritis increased amazingly. After several years of scepticism the author has been obliged to recognize the fact that in many of these cases alcoholism was an impossibility. The disease existed in its worst form among the Reconcentrados, and among those people who were suffering from lack of food and attention to the simplest rules of hygiene. This seemed to be the sole cause which could be invoked for the condition. The fact that after the liberation of the patients, when they were permitted to return to their homes, and when they once more were able to obtain sufficient nourishment, a complete or partial cure resulted.

### Postneuritic Atrophy of Both Optic Nerves Due to Mumps.

DOR, SR., Lyons, *(La Clinique Ophtalmologique*, August 25, 1900.) Several cases of greater or less disturbance of vision during or following attacks of mumps have been reported by Dor. For the most part, the trouble was simply sufficient to give rise to a sensation of a temporary fog before the eyes. There were very few cases of marked optic atrophy among the number. To this list the author adds an additional one. His patient belonged to the same class as most of the others, the military, In this instance there was a slight improvement of vision, the acuity never becoming more than sufficient to enable the patient to see to count fingers at a distance of a few feet, notwithstanding the fact that treatment was pushed vigorously. The disease was in all probability, he says, due to toxemia.

### On The Cortical Centre of the Macula.

JOCQS, Paris. *(La Clinique Ophtalmologique*, September 19, 1900.) Jocqs' patient, a woman fifty-eight years old, was first seen at the time of writing his original paper four years ago. At that time she had a paralytic stroke. This gave rise to a right homonymous hemianopsia. Two years later another stroke rendered her completely blind for a period of five or six days. The central portion of the visual field gradually became active, but the peripheral areas remained blind. The patient acquired the ability to read short words easily, but had trouble with long ones, as she could not see all of the letters simultaneously. The author accepts that hypothesis which admits that each macula is represented in each cerebral hemisphere. He concludes from a study of his case that: 1, Isolated centres for the macula exist in the cortical visual sphere; 2, Each of these two cortical macular centres is in connection with the macula; 3, The cortical centre lies very close to the cortical center for peripheral vision.

### Double Homonymous Hemianopsia.

JACQUEAU, Lyons. *(La Clinique Ophtalmologique,* September 10, 1900.) Two cases of this condition are quoted by Jacqueau. In the first, the patient, a man, who was an old rheumatic, suffered from sudden failure of vision. Examination showed that central vision was intact, but that the peripheral was destroyed. Two days later after treatment, some of the peripheral sight returned. There was complete right hemianopsia, the line of demarcation, however, not being straight but making a slight curvilinear extension around the fixation point. Nothing more was gained by treatment and the patient died two monts later, the author being unable to secure an autopsy.

The second patient was an old man. He became suddenly blind before he was seen. At the time of examination absolute blindness still existed. The irides reacted to light. Ne changes in the macula or retina could be observed. The patient was quite indifferent to his surroundings: Otherwise his condition was good. There was no central vision, as in the other case. From these two cases the author draws three conclusions: 1. The macular retinal bundles do not decussate. A special macular centre in all probability exists, it being most probably situated quite near to the centre for peripheral vision. 2. Double hemianopsia of sudden appearance usually occurs in two periods; but as a rule the first attack passes away unperceived until the onset of the second. 3. This double form of hemianopsia may exist alone and isolated, or may be preceded by transitory visual disturbances that are premonitory of absolute blindness.

### The Action of Abrine on Granulations.

DE LAPERSONNE AND PAUNBLAIN, Lille, (*Archives d' Ophtalmologie*, August, 1900.) These authors assert that abrine dropped onto a healthy conjunctiva produces a considerable aggregation of leucocytes, either polynuclear or with one large nucleus. This action is accompanied with an enormous serofibrinous transudation and a casting off of the conjunctival epithelium. In their experiments, at the end of twenty-four hours' time, the false membrane remained still unformed, but very fine fibrillae could be seen lying on the surface of the mucous membrane. The drug produced a positive chemotaxis.

They found that although antiabrinic serum controls the effect of the drug to a slight degree when used in man, yet its power is too limited to give it any clinical value.

In the authors' hands, a one per cent. aqueous solution, of the drug produced the best results. After cocainizing the conjunctiva the internal surface of the upper eyelid was rubbed thoroughly with a cotton wad soaked in the solution. This was repeated on the second and following days, no more being necessary. On examining certain cases several months after a cure had been thus wrought, the membrane was found to show scar markings which invaded the conjunctival membrane,

As to the modus operandi of the drug, it is probable that it produces violent inflammation which gives rise to a great amount of cellular tissue that in time is transformed into cicatricial tissue. This is followed by a rapid disappearance of pannus, which is supposedly due to a thrombosis of the small arteries caused by the leucocytes that choke them.

### Symmetrical Angiomeagaly of tho Upper Eyelids.

ROHMER, Nancy (*Archives d' Ophtalmologie*, August, 1900.) Under the above heading Rohmer describes four cases of the disease already mentioned by Fuchs, and by him called blepharochalasis. The clinical history of all the cases was quite similar. The patients were all females, three of them sixteen years old or less, the fourth being sixty-two years of age. In each instance the disease began during childhood, either without apparent cause and insidiously, or else as in one case, suddenly during a fit of temper while rubbing the lids. In this case the eyelids were swollen: this gradually increased for one or two years' time. Finally, a longitudinal lobe which hung down over the lid to a greater or less extent, was formed. This lobe consisted of skin which was very much thinned and contained a great number of enlarged arteries and veins. During times of mental excitement the tumor increased in size and became of a brighter red color.

### Acute Abscess of the Palpebral Lachrymal Gland of Rosenmüeller.

SOURDILLES, Nantes. (*Archives d'Ophtalmologie*, August, 1900.) Although diseases of the secretory portion of the lachrymal apparatus are undoubtedly rare, the author says, yet there is reason to believe that cases are from time to time overlooked, or confounded with other lesions. The number of cases reported therefore are much smaller than they should be.

Sourdilles increases the list by three cases of acute abscess of the gland of Rosenmüller and accompanies the report with a careful clinical study of the disease. It is usually seen at about two to five years of age. The onset is generally acute. Frequently no cause can be found, though at times, the trouble may be traced to one of the infectious diseases, such as mumps or rubeola. As a rule the onset is acute, first appearing as a violent conjunctivitis. In a few days or less time the eyelid swells and becomes violet in tint. At a position midway between the external canthus and the insertion of external rectus muscle a tumor develops. Fluctuation appears and an abscess points in the superior cul-de-sac, finally spontaneously breaking if left alone. There is but little systemic disturbance and but a slight rise of temperature. If the patient be seen early, abortive measures may be tried, but if these do no give some favorable result in twenty-four hours' time, heat should be applied in order to favor suppuration. When this occurs, the abscess may be lanced, or, what is probably more efficient, the inflamed porwith the microscope, the condition is found to be an inflammation which centres around the excretory ducts during the earlier stages of the troubles. Later, other portions of the gland become infiltrated with leucocytes. One of the pecularities of the affection, is, that it may found in different parts of the gland with intervening healthy tissue. In one case in which the pus was examined, the germs consisted of staphylococcus albus in pure culture. The author states that the disease must be distinguished from abscess of the orbital portion of the gland, from conjunctivitis, gummata, periostitis and chalazion.

### Parenchymatous Keratitis as a Primary Manifestation of Zona Ophthalmica.

TERRIEN, Paris. *(Archives d' Ophtalmologie,* August, 1900.) Stated that an attack of parenchymatous keratitis preceding by two weeks an attack of zona ophthalmica is a rare and interesting phase of the disease. In his case the corneal inflammation was accompanied with a marked though limited scleritis situated at the supero-external sector. The corneal epithelium was intact. The cutaneuus eruption lasted but a brief time.

### Etiology and Treatment of Chalazion.

STRZEMINSKI, Wilna. *(Recueil d' Ophtalmologie,* August 1900.) States that it is probable that bacteria are the casual features in chalazion but as a rule they do not produce an inflammation of the glands of healthy individuals. Basing his proportion upon one hundred and nineteen patients, he has determined that twenty per cent are found in persons suffering from tuberculosis; in seventy-two per cent there were conjunctivitis and blepharitis. Stricture of the lacrymal canal was foud in thirty and one quarter per cent; ametropia in twenty-seven per cent; and scrofula in twelve and six-tenths per cent. It is interesting to note that the author has succeeded in curing sixty-three cases of chalazia by absorption, omitting all those that were of less than six weeks' duration. To accomplish this result, he employed an ointment composed of pure iodin, twenty centigrammes; iodid of potassium, sixty centigrammes; lanolin, four grammes; oil of vaseline, eighty centigrammes; and distilled water, eighty centigrammes. This ointment was rubbed on the eyelids every night at bed-time and allowed to remain until morning. The length of time required to effect the desired result varied from two weeks or less to two months' time. If by the end of the latter time the tumor still remained, it was excised.

### Visual Acuity and the Chromatic Sense in Railway Engineers and Firemen.

DESPAGNET. *(Recueil d'Ophtalmologie,* August, 1900.) Despagnet holds that as at times subjects of normal vision have difficulty in seeing at any distance through fogs or mists, it is wrong to entrust the running of any engines with the consequent necessity for a sharp watch ahead to anyone with less than normal vision. He says that glasses may correct any errors and raise the visual acuity to normal while they are clean, but as they are very liable to become dirty they should be avoided. All engineers and firemen should be required to have normal vision with normal color-perception without glasses. This he states, is the rule on the goverment roads in France, and he has found that it does not interfere with an abundant supply of men as is shown by the fact that there are constantly on hand a waiting list of about fifty applicants for each vacancy.

### Cerebral Blindness—Loss of Topographical Sense—Autopsy.

TOUCHE, Brevanne. *(Annales d'Oculistique,* September, 1900.) In 1896, the patient seen by Touche, had a stroke of apoplexy without any loss of consciousness, this leaving him with some slight difficulty in talking. This soon disappeared. Two years later the patient had a left hemiplegia. In October of the same year be became suddenly blind, the pupils being somewhat contracted. The ocular media were transparent. There was not any reaction of the irides to light-stimulus. There was conjugate deviation of the head and eyes to the left. By an effort, the eyes could be brought to the median line but not beyond, and as soon as the effort ceased, they returned to left. Taken singly, the conserved movements were those of elevation and depression. Lateral movements were limited, mostly so in the direction toward the nose. The man was troubled by "nightmares." At first during these attacks he saw slain animals; later groups of people; and finally flocks of birds. In April of this year, the patient recovered a slight amount of vision, and at the same time the attacks of incubus disappeared. Vision for distance became quite clear—but near-vision remained very indistinct. On account of a nystagmus an attempt to register the extent of the fields of vision was a failure. In both eyes however, it was found that the left side of field alone remained. In the vertical meridian the patient could see only above a line that was situated fifty centimeters above the horopter. His memory for color was well preserved and that for contours was very much diminished, while that for localities was lost. As sight returned, the memory for contours returned. Monocular vision was lost and any attempt to regard objects steadily produced a temporary blindness.

At this time the slight amount of power existing in the patient's legs diminished, the patellar reflexes disappeared, and tactile and pain senses were lost on the left side; similar changes in a slighter degree existing on the right side. There was marked retention of urine without sensation.

On the twenty-fifth of June his condition was as follows: Conjugate deviation of the head and eyes to the left. Impossible to raise or lower the eyes or to turn them to the right. If his head was turned to the right his eyes would go to the median line but would soon return to the left. There was not any trouble in speech, intelligence or hearing. There was complete anesthesia of the lower extremities below the middle of the thighs. Over the rest of the body sensibility was retarded. The patellar-tendon reflexes were abolished. "Brown-Sequard's clonus" of the foot was absent. The plantar reflexes on both sides were exaggerated. The toe phenomenon existed only on the left side.

That evening the patient became unconscious and died. Before death, the head and eyes were turned as throughought the day. There was trismus. Several intermittent contractures of the inferior portion of the face were noticed. The pupils were contracted. There were movements of rotation and elevation of the right shoulder. The lower limbs were immobile. The upper extremities were insensible to pricking. No movements of resistence were made when the upper part of the left thigh was pricked. Deglutition was impossible.

It is interesting to note that a few days before death, disassociation of sensibility of the upper and inferior members was noted, anesthesia for pain being absolute; whereas for other sensations it was simply diminished. Autopsy revealed the presence of a wide spread degeneration of the brain. In the right hemisphere this included the first, second and a part of the third convolutions. The second parietal convolution, the gyrus supramarginalis, the curved fold, the first temporal except at its anterior end, the second temporal within the same limits, the inferior temporal, and the posterior convolution of the insula, were all affected. From this area ran two prolongations, one between the first and the second occipital convolutions and the other passing into the parieto-occipital fissure. On the internal face of the same hemisphere there was a depression which occupied the median portion of the calcarine fissure. The cerebral cortex in this region was not as firm as it should have been; that is without being altered itself, it seemed to rest upon soft tissue. A section of this hemisphere passing at the level of the optic tract showed that the lesions extended into the lenticular nucleus and farther back to the occipital prolongation of the lateral ventricle. The softened areas extended to the deep surface of the calcarine fissure, thus explaining the depression of the cuneus, before alluded to.

In the left hemisphere, the following areas of softening existed; almost the entire lower surface of the tempero-occipital lobe; all of the cuneus; the lingual lobes, the fusiform lobe, and the hippocampal convolution. There was also softening of the second and the third temporal convolutions as well as in a position posterior to a line prolonged externally from the optic chiasm. Section of this hemisphere on the level of the optic tract showed that the lesions extended in depth to the posterior prolongation of the lateral ventricle. Moreover, there was softening of the optic tract occupying the limits of the internal and external nuclei running parallel with the posterior segment of the internal capsule. In a section lower down, a similar softening to even a greater extent was found touching the body of Luy's and the red nucleus, and continuing posteriorly with the softened area of the temporo-occipital lobe. The degeneration of the temporo-occipital lobe, the optic tract and the underlying structures was probably due to the same lesion of the posterior cerebral artery. The quadrigeminal bodies were intact. In the cerebellum, the softened portions were the upper surface of the left lobe, occupying the external part of superomedian and the superoposterior lobes.

The author arrives at the following conclusions: 1. The seat of topographical memory lies in the fusiform lobule of the left side. 2. An almost total destruction of the inferior surface of the temporo-occipital lobe of the left side is compatible with a remarkable degree of memory for colors. 3. The reappearance of vision in the left and upper portions of the field, coexistant with subcortical softening of the right calcarine fissure, seems to indicate that the fibres issuing from this point respond to the left and the inferior portions of the visual field. 4. The simultaneous appearance of conjugate deviation of the head and eyes and of blindness, shows that these two conditions are due to the same cause; softening: that is to say, softening which reaching the temporo-occipital lobe gives rise to blindness and attacking the optic tract produces ocular deviation. In several cases of hemorrhage or softening of the optic tract an analogous conjugate deviation has been observed.

### Radial Wound of the Iris Due to Contusion.

AUBINEAU, Brest. *(La Clinicque Ophtalmologique*, September 25, 1900). Two cases of .this ocular condition one of which was due to a blow from a portion of a Ricocheting bullet are reported by Aubineau. The second was dependent upon a direct shot from an airgun. In each instance, the eye quickly recovered, leaving more or less of a colobomatous area.

### Three Cases of Foreign Bodies in the Eye.

LEONARD, Sedan. *(La Clinique Ophtalmologique*, 25th September, 1900.) In the first instance, a piece of steel penetrated the cornea and lodged in the ciliary region of the eyeball. The eye soon apparently recovered from the shock. Six months later, the piece of metal presented at the point of entrance and was removed. Recovery was rapid.

The second case was that of a stonebreaker who was struck with a small splinter of wood while at work. The foreign body penetrated into the orbit at its external portion toward the sphenomaxillary foramen. The wound of entrance was hidden by the uninjured lower lid. In the third case, a man, a piece of steel remained in the anterior chamber for a month's time without the patient experiencing the slightest trouble from it. The foreign body was removed and the patient made an immediate recovery.

# ABSTRACTS FROM SCANDINAVIAN AND RUSSIAN OPHTHALMIC LITERATURE.

BY

A. BARKAN, M. D.,
SAN FRANCISCO, CAL.

AND

PROF. DR. KRUKOW,
MOSCOW, RUSSIA.

QUARTER ENDING Sept. 30TH, 1900.

### Spring Conjunctivitis in Russia.

NATANSON, DR. ALEXANDER, Moscow, states concerning the rarity of Spring conjunctivitis in Russia that no case of it is described in the literature of the country. In St. Petersburg (1888—1897) out of 191,000 cases with 9 per cent Trachoma only one case reported. In 100,000 cases in Moscow only three cases observed. In Kiew, far south, out of 18,000 polyclinic, 3500 office patients, (25 per cent of the latter being Trachoma cases) only five cases observed.

He says it is difficult to explain why this form of conjunctivitis is so much less frequent in Russia than in many lands of same mean climate and latitude. Mistaken diagnosis can hardly be used as an explanation since most Russian physicians are educated in countries where they become familiar with the disease. The author believes that the etiology depends, not upon climate, but upon other things as, humidity, meteorological conditions, etc.

### Report of Cases.

HALSTRÖM, DR. JOHAN. (*Nordiskt Medinisk Arkor.* Bd. 32, H. 4.) Reports the following interesting case; — Patient, female, aged 47 years, had suffered for 32 years, biweekly, from severe attacks of migrainė. In 1889 attacks began to be accompanied by obscuration of sight and a perception of color rings. These phenomena always disappeared with the attack. Most careful examination of eye negative; no symptoms of glaucoma; diagnosis: hemicrania ophthalmica.

Three months later disturbance remained after last attack. Eye showed form of glaucoma evolutum, cornea cloudy, anterior chamber shallow, pupil dilated, very slight reaction, disc deeply excavated, arterial pulsation. Tension + 2, V. fingers at 2 m. Iridectomy performed next day, good result. Migraine attacks continued but no further trouble in the eye.

Six weeks later same color phenomena in other eye, sight remained bad and 14 days afterward manifest glaucoma appeared. Instillation of eserin caused disappearance of symptoms, but subsequent migraine attacks caused glaucoma complications again. Iridectomy followed by no result. Second iridectomy performed and symptoms disappeared although migraine attacks were not influenced.

### Diplococcus Intracellularis Is Meningitidis In the Eye.

HAGLUND, DR. PATRICK, assistant in the Pathological Institute in Upsala, in an extended report on the occurrence of pseudo-gonococcus in the eye, reviews the literature of the subject and is inclined to support the theory advanced by Fränkel and Krukenberg that the pseudo-gonococcus and the diplococcus intracellularis meningitidis are identical.

He describes very extended investigations in three cases of conjunctivitis under his care, and gives it as his opinion that the meningococcus is directly the cause of the disease, though since the experiments with animals gave negative results it could not be absolutely proved.

He believes intraconjunctival inoculation unwise until we have more definite knowledge upon wider investigation.

### Sarcoma of the Eye.

KERSCHBAUMER, DR. R. PUTIATA'S (J. F. Bergmann, Pub., Wiesbaden, 1900.) recently published work on sarcoma shows that there have been advances and some changes of opinion on the subject since the publication of Fuchs' monograph 18 years ago.

Dr. Kerschbaumer's monograph is based upon anatomical investigations she has made upon 67 eyes, most of them in the collection of Prof. Sattler. The first part deals with the anatomy and histology of the growth.

In the first chapter sarcomata are classified according to form, (a) the angiosarcoma, (b) the melanosarcoma. The author distinguishes strictly two entirely different forms of pigmented sarcomata, the real melanosarcoma which arises in the pigment layer, and (c) the leucosarcoma with secondary hematogeneous pigmentation; (d) the less malignant spindle celled sarcoma, and (e) combination forms.

In the second chapter they are classified according to position, (a) the diffuse or flat sarcoma which is very malignant on account of its tendency to extraocular spreading and metastasis, (b) circumscribed sarcoma. The latter is again divided into (1) the epibulbar sarcoma which arises either as an accession to the conjunctival and episcleral vessels, the beginning of which may be observed as a growth of adventitious cells, or as melanosarcoma arising from naevus pigmentosus, (2) the infrequent iris sarcoma, (3) early sarcoma of the ciliary body accompanied by glaucoma, (4) choroid sarcoma.

The extraocular spreading occurs most often by way of the lymph spaces about the vessels or the vessels themselves.

The third chapter deals with diseases of the eye which may be predisposing factors of sarcoma; (1) those diseases which precede the tumor and which may be a cause, or at least may predispose to the disease, as (a) injuries, (b) inflammations, (c) diseases of the blood vessels; (2) modifications. The modifications are first inflammatory, mostly as results of retrogressive processes in the tumor, and later, glaucomatous.

The main body of the book is given to the consideration of the 67 cases mentioned. The differential diagnosis are especially valuable.

Clinical treatment summarized thus: Removal of tumor with idea of saving eye useless. As early as possible enucleation is to be performed. In beginning metastasis, also, operative treatment is advised.

The book offers nothing essentially new, but is an excellent exposition of the subject as it stands today.

### Leprosy of the Eye.

DRS. LYDER-BORTHEN AND H. P. LIE, (Leipzig, W. Engelmann, Pub.) In a monograph based upon a clinical study of leprosy, Dr. Lyder-Borthen of Throndhjem, Norway, gives special attention to the frequency of eye infections in both the maculo-anesthetic and nodular forms. His research confirms the old opinion that leprosy is very frequently localized in the eyes in the early stages, and that in further advanced stages complications rarely fail.

In the maculo-anesthetic form he reports 26.8 per cent. free from eye affections, 12.4 per cent. with involvement of lids and eyeball, 60.8 per cent. with involvement of eyeball. In the nodular form, 1.7 per cent. free, 28.3 per cent. extraocular affection, 70 per cent. involvement of extraocular parts and eyeball. In all cases the eye complications were more severe and frequent in the later stages of the disease.

In cases of very long standing the virus seems to become weakened and the deterioration is not so rapid.

Sexes about equally affected there is no part of the eye which may not be involved.

Author makes distinction between the effects of nodular form which affects the eye directly, and the anesthetic which affects the surrounding parts, making the eye appear abnormal as in lagophthalmos, etc. Affections of deeper parts, as choroid and retina, are less frequent and of less importance since they occur only in later stages.

In speaking of treatment the author states that in maculo-anesthetic form the best treatment is the same in the beginning as in secondary iritis.

In the nodular form, keratotomy according to Bockman's method is recommended, as this arrests the further growth and enables the patient to close the eyelids.

In the second part Dr. Lie gives the pathological anatomy, relation of nodules to surrounding vessels and mode of spreading. Also its essential differentiation from tuberculosis.

# ABSTRACTS FROM AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

J. GUTTMAN, M. D.

NEW YORK, N. Y.

Quarter ending Sept. 30th, 1900.

### Ocular Vertigo Caused by Absence of the Lens.

KLEIN (BARINGER), S., DR. (*Wiener Medicinische Presse*, June 10th, 1900.) Mrs. C. P., 60 years of age, suffering from a mature cataract a diabetica of the right eye. Her urine contains 3—6 per cent sugar. The patient's vision is very poor, so much that she cannot walk without assistance. Extraction of the cataract of the left eye was advised and subsequently performed. The patient's recovery after the operation was without any special incident and in time the pupil became quite clear and transmitted the light fairly well so that Dr. Klein could examine the fundus with the ophthalmoscope quite well and it appeared to be normal. Four weeks after the operation the vision of the patient was tested, and when Dr. Klein asked the patient to walk about the room with the proper spectacles on, she became dizzy and she would have fallen, had she not been supported quickly. The author ascribed this debility to her diabetes. He therefore discontinued the examination. Four weeks latter, however, the same occurrence was repeated. The patient complained that she becomes dizzy and is unable to assume the erect posture. It is true, she said, that she is weak and must be supported in walking but she is not suffering constantly from dizziness. She becomes dizzy only when she puts on the glasses. The glasses were removed. The vision, which with + 10 D. was quite good (V. $^6/_{24}$) now became very poor, but the dizziness disappeared. The patient could now stand firmly and could move freely. The glasses were put on again, the patient became dizzy, she swayed and was in danger of falling, so that the glasses had again to be removed. It was now very evident, that this phenomenon was the result of the optical effect of the convex lenses, but he neverthelss examined the patient again a month later. The eye was now quite pale and entirely free from any irritation but the capsule had become in meantime a little thickened and its transparency had been diminished. In spite of that the vision was still failry good (V. $^6/_{36} < ^6/_{24}$). The putting on of the convex glasses made the patient feel quite comfortable and it seemed for a moment as if the sensation of the dizziness had entirely dssappeared. But as soon as the patient tried to walk a few steps she became dizzy again. He asked her then to fix her eyes straight forward and to look fixedly on that point. She could then walk a few paces without any swaying, she however could not do that for any length of time. He now prescribed the proper glasses with the direction, that until she became accustomed to their use, she would always gaze fixedly forward. She should remove the glasses, when she becomes dizzy. The author holds, that this dizziness is caused by the monocular polyopia, which in return is produced by the effect of the marginal rays. The patient in fact asserted that she saw all objects in the room multiplied; she did not see one clock, but many clocks, 10—12 doors and all these objects danced in front of her. He thinks that on account of the multiplication of the objects produced by the marginal rays the patient becomes confused and this she calls dizziness. People in whom the lens has been removed see with their glasses only in the centrum and in the nearest circle around the centrum. Their field of vision is limited e. g., the objects seen through the margin of the glasses are blurred so that the person without a lens is compelled to learn to neglect the images of the margin of the glass. He neglects the marginal images, and if he is able to do so perfectly he is satisfied with his vision and his glasses. If he does not learn to neglect these marginal images he becomes dizzy and confused. It is true that this happens very rarely but still we cannot doubt the correctness of this explanation. The reason for this disability to neglect the maringal images might in this case be the debility of the patient caused by diabetes. There might also have existed a special weakness of the external muscles of the eye, which prevented the eye from remaining in a fixed position. That this vertigo was of ocular origin is obvious from the fact that it disappeared, if the glasses were removed and reappeared when the glasses were used. As the patient could not accustom herself to the use of glasses he prescribed glasses which were opaque at the margin. The glasses were transparent only in the centre for a diameter of about 1 mm. whereas the rest of the glass was hazy. But even these glasses were rejected by the patient. Later the cataract of the other eye was also removed. The patient could not use the glasses for distant vision, but she was quite satisfied with her near vision, for she then did not suffer from any dizziness. This fact the author considers also as confirming the correctness of his explanation of the cause and nature of that dizziness. In the near vision the fixation is more exact and the vision through the centre of the glasses is much easier than in distant vision, where we wish to be acquainted with the surroundings and we look all around and so come in conflict with the marginal rays. The necessity for a wide field of vision is superfluous for seeing near.

### Ocular Vertigo.

KONIGSTEIN, DR. L., (*Wiener Medicinische Presse*, July, 1900.) The author refers to the article published in the Wiener Medicinische Presse by Dr. Kline and also cites 2 cases which showed the same affection.

J. L., 79 years old, was operated 15 years ago for cataract of the left eye. The operation was successful but the eye was not used, as the right eye had normal vision yet. Two years ago the vison of the right eye decreased down to 3/60 so that the left eye had to be used. The examination showed that with + 9 = + 3 D cyl., vision was 5/IX and that with the proper glasses he could read the finest type. The patient was very happy and could hardly wait to get his glasses made. But shortly after the patient came back with glasses in hand and complained that he could not use his glasses in the street, as he always became dizzy and was afraid of paralysis. For reading he was satisfied with the glasses and he felt no dizziness. The author then tested the glasses and found the optician filled the prescription correctly. He then had the patient put on the glasses and examined his vision. The examination showed again the same result. The patient could read again 5/IX. The patient was quite astonished and could hardly believe that those were his glasses. The doctor then asked him to walk about the room. He showed an uncertain gait and a certain stiffness of the neck, and when told to move his head in his walk, he only stiffened it more. He asserted that the floor moves when he puts his foot on it and he therefore felt dizzy. It is quite plain that the patient by his forced stiff neck looked through the marginal part of the glasses, which in cataract glasses has a prismatic effect. Normally the movements of the eye during vision are very slight, as the corresponding movements of the head partly take their place. The patient did not look through the centre of the glass, but allowed the marginal rays to enter his eye, and this produced not only blurred but also deflected image and thus caused the dizzy sensation. I advised the patient to learn to move his head. Shortly afterward the patient came back and said that he can use the glasses now better, but still he feels safer in a close room than on the street, and that he feels quite weary when walking down stairs. He therefore wears his glasses when in the room, but he takes them off when walking in the street or when walking down stairs.

The second case resembles very much the first one. O., 80 years old was operated on his right eye for cataract, the left eye still had fairly good vision. In 1898 the vision of the left eye diminished so much that he had to get glasses for the right eye. With + 12 = + 1 D. cyl. h. vision was 6/X; with 15 = 1 D. cyl. h he could read quite well. The patient left the city for his home. A few weeks later he came back complaining that he sees quite well with the glasses in the room but on the street he feels dizzy and uncertain. This patient, in spite of his years, walks very erect and holds his neck stiff. He is quite well satisfied with his glasses for reading. The author agrees with Dr. Klein in that, that the vertigo is produced by the patient looking through the marginal part of the strong convex lenses, but holds that the prismatic effect of the glasses is more responsible for the dizziness than the refractory effect of the glasses, and thinks that all this is produced by the disconcerted action of the muscle of the eye whith those of the head.

### Extraction of a Foreign Body by Means of Hirschberg's Magnet.

CHAPODI, STEPHAN, (*Pester Medicinische Chirurgische Presse*, July 1, 1900.) The eye of a locksmith, 26 years old, was injured by a splinter of iron November 9, 1898. The lower part of the conjunctiva became suffused with blood, ocular tension remained normal. Ophthalmoscopic examination showed a shining body lying in the vitreous. Its anterior portion was in contact with the hazy peripheric part of the vitreus. Posteriorly it extended toward the middle of the bulbus. After having cut the conjunctiva with Graef's knife an incision was made in the lower and inner part of the sclera and the magnet was intoduced by means of its curved thin point. On extraction of the magnet a sharp piece of steel, 5 mm long, came along. Healing went on without interruption, Now the author demonstrates the patient $1^1/_2$ years after the accident, and shows that the eye appears healthy and free from all shrinkage. Vision is 5/50. Ocular tension is normal, so that the favorable result can be looked upon as final. Ophthalmoscope shows a small conical detachment of the retina at the site of the injury and operation. The vitreous is clear. In the middle of the vitreous there is a peculiar knob-like thickening from which many fibres radiate. This formation appears similar to the embryonal changes of the canalis hyaloideus. Its direction is also similar, it appears, as if extending from the papilla to the lens. In the ophthalmological department of the Hebrew Hospital 26 extractions with the magnet were made. In 18 cases the result was good, in the other 8 cases the foreign bodies could not be extracted with the magnet. In 17 cases the normal shape of the eye was preserved, In some cases the power of vision was fairly well preserved. In 3 cases enucleation became neccessary, and in six cases the eye shrunk. Regarding the duration of the good result it is interesting to note the above cases, in wich the vision after the operation was 6/5. Vision remained good for a year, after that the retina became detached at the site of the former wound and vision diminished to 6/20. We must therefore be conservative in judging the final result.

### Two Rare Cases of Irideremey.

v. BOGUSZ, DR. EMIL, (*Wiener Medicinische Wochen-*

*schrift*, July 14, 1900.) The partial or total detachment of the iris from the ciliary body in consequence of a trauma has long been known. If the iris is totally torn from its attachment we call it aniridy or irideremy. All violent attacks upon the bulbus can produce irideremy. In rare cases a total detachment of the iris can be produced without a perforation of the capsule of the eye bulb. Cloquet described a case in 1834. In most cases, however, the coats of the eyeball are torn to such an extent that it is quite unusual that the iris alone or together with the lense are extruded.

Cases in which there was a comparatively small opening, by means of which the totally detached iris found exit, are very rare. The rarity of this occurrence justifies the publication of the histories of the following two cases. The first was treated by Prof. Fuchs, and the history of the case is as follows:

A butcher, 46 years old, was struck in the right eye 24 years ago by a small piece of bone. According to the report of the patient a small macula on the cornea remained permanently, in all other respects, however, the eye appeared normal and vision was also excellent. On December 31st, 1894, the patient struck the corner of a bedstead with his right eye and immediately after that he felt a severe pain in his eye. He wiped the eye with a handkerchief and thereupon vision was entirely gone. He came to the clinic on the same day and brought his handkerchief along. A small black membrane was found to be adherent to the handkerchief, and on close examination it proved to be the iris. On the eye itself a very small wound was found on the inner and upper quadrant of the cornea. The anterior chamber was filled with blood. Four days after the blood was absorbed and there appeared on the above mentioned part of the cornea a white hazy infiltration which began at the limbus. Its length was 4 mm. its width 15 mm. In the middle of this infiltration could be seen a small wound, out of which hung a mucous thread. The iris was entirely absent, the ciliary body could be seen along the outer margin of the cornea. The lens showed a posterior cortical opacity which prevented the examination of the interior of the eye. The second case was observed [by the author himself. A laborer 25 years old became mixed up in a fight on December 2d, 1899. He was hit on the left eye with a heavy club. During this assault he felt a sharp pain in his left eye, and vision in that eye was immediately lost. Shortly after the eye was washed by a physician, and this caused him no pain. The following day he was brought to the II Ophthalmological Clinic. The author found a slight abrasion on the forehead and another abrasion on the slightly swollen lids. The conjunctiva of the lids and of the eyeball was inflamed. The cornea was clear and shining. In the inner lower quadrant of the cornea there was a small wound 1 mm. long. Its margin was pasted together by blood, and around this wound there was an opacity of about 1 mm. Beside the above mentioned small wound there was no other wound on the bulbus. The anterior chamber was very deep and filled with blood in the lower part. The lens showed a posterior polar cataract. By oblique illumination the border of the lens showed a golden reflex. There could also be recognized in the upper part behind the cornea the filaments of the ciliary body and the filaments of the Zonula Zinnu. Nothing could be seen of the iris. The eye was bandaged and the effusion of blood was quickly absorbed. A few days after this the whole anterior chamber could easily be examined; it was found that the iris was totally absent. Twelve days later the patient left the hospital in the following condition. The conjunctiva palpebrarum and bulbi was pale, the cornea was clear and shining with the exception of a small area of infiltration about the size of a pinhead, in its inner and lower quadrant. The anterior chamber was deep, there was no trace of the iris; the lens which was opaque in its posterior portion was slightly tilted inward. Ocular tension was normal Vision was limited to counting of fingers at the distance of 1 m., and it could not be improved by glasses. The papilla could be seen with difficulty and it seemed to be normal. The author then dwells at length upon the different theories of Arlt, Foerster and Mueller concerning the mode of the detachment of the iris in consequence of a blow on the bulbus of the eye. He then concludes as follows: The blow upon the bulbus probably caused a complete detachment of the iris, at the same time the cornea was slightly torn, the humor aqueous was emptied with great force, and this flushed out the already detached iris. It is possible that in the first case there might have been only a prolapse of the iris and the patient by wiping his eye with the handkerchief tore the whole iris out of his eye.

# OPHTHALMIC NEWS AND ANNOUNCEMENTS.

(Under this heading the ANNALS will publish items of interest. Please address Dr. B. E. FRYER, 520 E. Ninth Street, Kansas City, Mo.)

Dr. L. Bach has accepted a professorship at Marburg.

At Graz Dr. Birnbacher has been appointed full professor.

Dr. Gross has been made Extraordinary Professor at Budapest.

Dr. C. Hess has been appointed successor to Michel at Wurzburg.

Dr. A. Friedmann, of New York, has moved to Colorado Springs.

At Freiburg Dr. Nagel has been promoted Extraordinary Professor.

Professor Everbusch, of Erlangen, has accepted a professorship at Munich.

Prof. Carl Hess, of Marburg, has succeeded Prof. J. v. Michel, of Wurzburg.

Dr. Axenfeld has declined the appointment at Marburg as successor of Professor Hess.

Dr. Thorington has been appointed Professor of Ophthalmology in the Philadelphia Policlinic.

At McGill University, Montreal, Dr. S. W. Stirling has been appointed Lecturer in Ophthalmology.

Dr. O. Kuhne, who is so well known to the ophthalmic world from his researches in Retinal Purple, is dead.

At the last meeting of the Minnesota State Medical Society, Dr. Thos. McDavitt, of St. Paul, was elected Secretary.

Dr. E. S. Peck has been appointed Professor of Ophthalmology in the New York Post-Graduate School and Hospital.

Dr. James Thorington has been elected to a new chair of diseases of the eye, created by the trustees—Philadelphia Polyclinic.

Dr. Hugh E. Jones, M. R. C. S. L. C. P. P., has been appointed Honorary Surgeon to the Eye and Ear Infirmary at Liverpool.

Dr. David DeBeck has recently been appointed Professor of Ophthalmology in the Cincinnati College of Medicine and Surgery.

C. Devereux Marshall, F. R., C. S., has been appointed assistant surgeon to the Royal London Ophthalmic Hospital, Moorfields.

Dr. William C. Bane has been appointed Clinical Professor of Ophthalmology and Otology in the Denver College of Medicine.

The death of Dr. G. E. Williamson is announced. He was surgeon to the eye department, Royal Infirmary, Newcastle-on-Tynye.

Professor von Ruthmund has resigned his chair of ophthalmology at the University and his directorship of the Eye Clinic at Munich.

Prof. Von Rothmund has resigned his professorship in the University at Munich and also his position as director of the Eye Clinic.

Dr. Franz Shiek, of Halle, has completed a monograph on "The Clinical and Experimental Study of the Tuberculins in Iris Tuberculosis."

Dr. Morax was chosen, by the Concourse, Ophthalmologist for the hospitals of Paris. This is an innovation and it promises much for French ophthalmology.

Dr. Theodore von Schroeder has received the appointment of Director of the Ophthalmic Institute at St. Petersburg, in succession to Dr. Magawly.

Both New York and Philadelphia are said to have a visitation of conjunctivitis, due, it is supposed, to public baths, though more probably the towels are the main factor.

The new staff of St. Vinent's Infirmary of Indianapolis has been appointed. The eye and ear portion of the staff is as follows: J. L. Thompson, F. A. Morrison, D. A. Thompson and J. J. Kyle.

Dr. H. V. Würdemann of Milwaukee, the managing editor of these ANNALS, has been chosen honorary member of the Sociedad Cientifica "A Alazate," one of the oldest scientific societies of Mexico.

Dr. Albert B. Hale, collaborator on the ANNALS, has been ill with typhoid fever at the Baptist Hospital in Chicago for the past five weeks. Our readers will be pleased to learn that he is now convalescing.

Dr. Charles Zimmermann, of Milwaukee, has been appointed on the staff of the ANNALS OF OPHTHALMOLOGY. He will be associated with Dr. R. L. Randolph in the department of German ophthalmic literature.

Doctor Mitvalsky, of Prague, is dead. He was well known mainly through his studies upon intraocular tumors, (cysts of the orbit, choroidal sarcoma, sinus osteoma, metastic ophthalmitis, and thrombophlebitis).

Bequest to Wills Eye Hospital.—By the will of the late George W. Gross, of Lower Merion, Pa., all his estate, after the payment of a few small bequests, will revert to the Wills Eye Hospital, of Philadelphia.

Dr. St. Bernheimer, of Vienna, has received the appointment of Professor in Ordinary of Ophthalmology at the University of Innsbruck, Dr. Dimmer having accepted the Professorship of Ophthalmology at Gratz, Styria.

Privy-Councillor, Count Margaroly, M. D., has resigned his place as director in the University Eye Clinic at St. Petersburg. To Count Margaroly must be given the credit of building up this institution to the position it holds to-day.

A Scandinavian Medical Conference was recently held in Copenhagen. It is said to have been largely attended by physicians from Sweden, Norway, Denmark and Finland, and to have been a very successful gathering.—Philadelphia Med. Times.

Dr. G. Sterling Ryerson of Toronto has returned home from South Africa and resumed his practice in Toronto. He acted as consulting oculist to the British Army in the field as well as Red Cross Commissioner on Lord Robert's Headquarters Staff.

The Congress of Scandinavian Ophthalmologists, which has been organized on the model of Ophthalmological Congress annually held at Heidelberg, recently held its first meeting at Stockholm. The meetings are to be held every two years; the next will be held in Copenhagen in 1902.—New York Med. Record.

At Philadelphia Judge Pennypacker has refused to grant a charter for a Christian Science church on the ground that the state law against illicit medical practice must be upheld. The advanced Christian Scientists believes in no medical practice, illicit or licit. The serious charge has been made that in failing to resort to legitimate medical practice Christian Science sometimes leads to unnecessary death.

Faith Curist Indicted.—An indictment has been preferred against Harry E. Sollenberger and Ezra Sheets, of Philadelphia, charging them with the murder of a 7-months old infant, left in their charge at the "Beulah Orphanage" or "Fire Baptized Holiness Mission," conducted by them. The little one became ill and they failed to procure medical attention, with the result that the infant died.—Philadelphia Med. Times.

Dr. S. D. Risley, of Philadelphia, at the last meeting of the American Academy of Medicine, read a paper on "Hygeine of Vision in the Home." He described the family living-room, its origin, pleasures and evils. The natural and artificial lighting of the home were spoken of, and the importance of sufficient and suitable illumination of the home in conserving the general health and vision of the family was emphasized.—Ophthalmic Record.

Dr. Woolsey Hopkins of this city died on February 15th from pneumonia, at the age of 32 years. He was born in Alexandria, Va., and was graduated from the college of Physicians and Surgeons, New York, in the class of 1890. He was assistant surgeon to the Manhattan Eye and Ear Hospital, and was a member of the American Laryngological, Rhinological and Otological Society. A widow and two children survive him.—N. York Med. Record.

At the meeting of the Ophthalmological Society of the United Kingdom, held May 14th, papers were read by W. H. Jessop on "Embolism of Both Central Arteries of the Retina;" by C. Wray on "The Development of Myopia;" by S. Snell on "Congenital Papilloma of the Conjunctiva." "Periarteritis of the Central Artery of the Retina;" by S. Stephenson on "A Case of Ophthalmitis Associated with Basal Meningitis," and by R. M. Gunn on "Visual Sensations."

The many friends and admirers of Prof. Wilhelm Zehnder will be pleased to know that although retired from regular work he is still an active participant in many schemes of literary endeavor. We have just received from him a complete index of the Klinische Monatsblätter für Augenheilkunde from 1863 to 1899, inclusive, as well as a copy of the second edition (261 pages) of his notes on the World's Congress of Religions, held at Chicago, in September, 1893.—Ophthalmic Record.

Sore Eyes Caused by Public Bath House.—Many persons who have been using the free public bath on Bridge Street, Brooklyn, have suffered from a curious affection of the eye. Many of the cases have been treated at the Eye and Ear Infirmary. Some think a sewer which empties into the river near the bath-house may be responsible, while others think the steam-laundry towels may be the cause of the condition. An investigation will be made by the infirmary's physician.—Philadelphia Med. Times.

A Crusade Against Quacks.—Dr. S. G. James, the Kansas City member of the State Board of Health, has begun the campaign against quacks that was decided on at the last meeting of the board. He says this is but the beginning of a crusade that will be pushed vigorously all over the State. Dr. James has asked the assistance of the local Board of Health, Prosecuting Attorney E. E. Yates, and the United States Post Office Department in the movement, and from the present indications there will be some startling developments.—Philadelphia Med. Times.

At the meeting of the Medical Society of Pennsylvania, held at Wilkesbarre, Sept. 18-20, the address on Ophthalmology was delivered by Richard H. Gibbons, of Scranton. The subject was "The Electro-Magnet in Eye Surgery: with Demonstrations." Dr. C. A. Veasey, of Philadelphia, read a paper on "A Plea for the Earlier Recognition of Squint in Children, and the Earlier Application of the Methods of Treatment." The relation of the Oculist and Optician to the Profession and the Public, was the subject of a paper by Dr. P. J. Kress, of Allentown.

The death of Professor Dohnberg, of St. Petersburg, occurred June 20th, 1900. Dr. Dohnberg's death was due to an injury inflicted by an officer, in revenge for a private injury. Dohnberg was 48 years old, a native of Courland. He studied medicine at Dorpat University, and at the end of his course, 1874, was appointed Junior Physician at St. Petersburg. From 1878 to 1900 he performed the duties of Senior Ordinator. From 1885 he was actively engaged at the Clinical Institute of the Grand Duchess Helene Pawlowna, where first as Docent and later as Professor, he displayed his great efficiency. Dr. Dohnberg was one of the best known and most popular oculists of St. Petersburg, notwithstanding his large practice he never allowed it to interfere with his studies.

Throughout the civilized world there will be sincere regret for the death of Dr. DaCosta. It was the privilege of the editor of this department to serve two terms in Dr. DaCosta's wards in one of the Philadelphia hospitals many years ago. Even at that time Dr. DaCosta was probably the foremost pathologist as well as diagnostician of our country. As a teacher he was admirably plain and direct. His therapeusis was simple and yet forceful. As a consultant he was probably unequaled. In his relations with his fellows his gentle nature was always present and manifest, belonging as he did to the type of gentlemen which seems to be fast disappearing.

Darier, of Paris (Die Ophth. Klinik, No. 9, 1900,) recommends a 5 per cent. solution of Dionin as an analgesic in eye affections. One drop instilled into the conjunctival sac causes a burning sensation, like cocain, but of longer duration. These instillations are repeated with intervals of a few minutes until a pronounced chemosis appears. With the chemosis the analgesic effect of the remedy shows itself, without, however, producing a true anesthesia of the cornea. It is useless to continue the instillations when the chemosis is established, because the tissues get rapidly accustomed to the effects of dionin. The 5 per cent. solution may be given the patient to use at home, but they must be instructed to use the dionin only in real and continued great pain. When the pain is excessive, inspergations of powdered dionin or subconjunctival injections of a 5 per cent. solution are of value; 0.01 gramme of dionin may, without damage, be injected under the conjunctiva.—Amer. Journal of Ophth.

Congenital Word-Blindness. James Hinshelwood. Remarking first that he has already published four different papers dealing with distinct varieties of letter and word-blindness, Hinshelwood describes another variety, showing that the subject is not yet exhausted. He reports four cases of what he calls congenital word-blindness, a defect of the brain which renders it almost impossible for the individual to form visual memories of words and letters. The first and second cases of this condition were rather marked, but the recognition of figures was in both, especially the second, much better than for words. In the last two cases there was no difficulty in figures, which he thinks indicates that these memories are registered in different portions of the cerebral cortex. He believes that these cases are by no means as rare as the absence of recorded ones would lead us to believe. The fact is they are not recognized and the children are whipped for stupidity, when the trouble is congenital and only partially remediable defect.—The Lancet, May 26th.

The following is abstracted from a report made from the Examination of the Sight and Hearing of the School Children of the

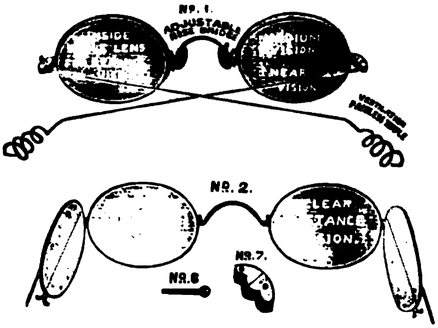
Milwaukee City by a special board composed of H. V. Würdemann, M. D.; Nelson M. Black, M. D.; Charles Zimmermann, M. D.; J. Steele Barnes, M. D.

Reports were received from 42 schools, resulting in an examination of 19,618 children; no reports being received from 9 schools. Of those examined, 5,798 (29.5 per cent.) was found to have less than normal sight or hearing.

5,055 (25.75 per cent.) children with defective visions were found; of these 2.580 (25.66 per cent.) were males and 3,209 (33.5 per cent.) were females; 222 (1.125 per cent.) were cases of strabismus. Reports received as to the number of children wearing glasses were incomplete, but the report from the E. S. High School shows that about 47.2 per cent. of the defectives were wearing glasses. This percentage, being taken from the highest grades, where the use of the eyes is necessarily greater, could hardly be used as the percentage to be expected in the lower grades. A great many cases of inflamed lids and "sore eyes" were reported whose vision was given as normal; this condition undoubtedly was due to eye strain, as also were the cases of "extreme nervousness" reported.

There were 1,419 (7.25 per cent.) cases of defective hearing in either one or both ears; the larger percentage of these having a foul discharge and complaining of more or less earache. Of these 609 (3.1 per cent.) were found to have difficult nasal respiration presumably caused by enlarged tonsils and adenoids in the pharynx.

In the Keystone, September, 1900, p. 951, Mr. John Wagoner describes a form of trifocal len which is explained by the illustration



and which may be useful in cases of hyperopic presbyopes whose vocation requires clear vision at both near and middle distances.

The Treatment of Diseases by Light.—Dr. Frinsen's Light Institute, Copenhagen, Denmark, was founded in 1896 for the purpose of making and encouraging investigations regarding the effects of light on the living organism, especially with the view of utilizing light rays in the field of practical medicine. Its success and growth have been phenomenal. Altogether, some three hundred and fifty cases of lupus vulgaris have been treated, in all of which satisfactory results have been obtained. A large number of cases have been treated experimentally for other diseases of the skin, among them erysipelas and alopecia areata. Scarlet fever is to be experimented with. In an interview had with Dr. Finsen a few weeks ago, he said that the light treatment as now perfected is so effective that there is reason to believe that every case of lupus vulgaris can be cured by means of it. Dr. Finsen's successful treatment of smallpox by means of red light is also very interesting and ought to be widely known. Both sunlight and electric light can be used for medical purposes. The arc lights used are each 4000 candle power. Dr. Finsen is also experimenting with photo-chemical baths to ascertain how far light is instrumental in supplying the skin with blood. He says that the red color of the exposed parts of the skin is caused principally by the action of light. Heat seems to hinder, and cold to further it.—London Optician (The Keystone, Oct., 1900).

Winking.—No satisfactory determination has been made of the reason why we wink. Some suppose that the descent and return of the lid over the eye serves to sweep or wash it off; others that covering of the eye gives it a rest from the labor of vision, if only for an instant. This view borrows some force from the fact that the record of winking is considerably used by experimental physiologists to help measure the fatigue which the eye suffers. In another line of investigation Herr S. Garten has attempted to measure the length of time occupied by the different phases of a wink. He used a specially arranged photographic apparatus, and fixed a piece of white paper to the edge of the eyelid for a mark. He found that the lid descends quickly, and rests a little at the bottom of its movement, after which it rises, but more slowly than it fell. The mean duration of the downward movement was from seventy-five to ninety-one thousandths of a second; the rest with the eye shut lasted variously, the shortest duration being fifteen hundredths of a second with one subject and seventeen hundredths with another; and the third phase of the wink, the rising of the lid, took seventeen hundredths of a second more, making the entire duration of the wink about forty hundredths, or four-tenths of a second. The interruption is not long enough to interfere with distinct vision. M. V. Henri says, in L'Annee Psychologique, that different persons wink differently—some often, others rarely; some in groups of ten or so at a time, when they rest awhile; and others regularly, once only at a time. The movement is modified by the degree of attention. Periods of close interest, when we wink hardly at all, may be followed by a speedy making up for lost time by rapid winking when the tention is relieved.—The Keystone, Sept., 1900.

Military Field Glasses.—Recalling the experiences of the troops in South Africa, the London Optician says: "Having in view recent strictures that have been passed upon the careless use of field glasses when on active military service, it is proposed to substitute objective lenses having a plane anterior surface for the ordinary form presenting a convex surface. The reflection of the sun's rays from such lenses would be visible throughout a much more restricted area than is the reflection from curved surfaces; but on the other hand, where seen, the reflection would be more intense. It is to be remembered also that there would be a sacrifice of defining power with such glasses, of otherwise ordinary construction. On the whole, such a substitute, or makoshift arrangement, has no advantage over proper telescopic sunshades."—The Keystone, Sept., 1900.

The following are the conclusions reached by Prof. DeSchweinitz in his extremely valuable paper on the "Comparative Value of Enucleation and the Operations which Have Been Substituted for It-" Read before the Thirteenth International Congress at Pairis:

1. Eyes so diseased or injured that they have already excited sympathetic ophthalmitis, or eyes which contain malignant growths, should be enucleated.
2. Eyes in which a suppurative process has begun may be enucleated with safety provided the process has not involved the surrounding orbital tissues or already begun to extend posteriorly so that it would be difficult to obtain an aseptic socket; otherwise evisceration is the safer operation.
3. The eyes so wounded that they are likely to excite sympathetic ophthalmitis should be enucleated, if two weeks or more have elapsed since the reception of the injury, because under these circumstances enucleation affords a greater security to the patient than any of its substitutes. If the eye is so injured that the sclera is extensively lacerated, enucleation is also indicated.
4. Eyes so wounded that they are likely to excite sympathetic ophthalmitis, if seen before two weeks have elapsed, need not be enucleated—that is, evisceration or Mules's operation may be performed, because, with perhaps the exception of a single case, there is no positive proof that these operations have of themselves excited sympathetic disease. They may fail to arrest the development of sympathetic ophthalmitis, just as enucleation may meet with a similar failure.
5. Staphylomatous eyeballs, especially when they occur in childred, need not, in fact should not, be enculeated. When uninflamed, they may be treated by the operation of abscission or complete keratectomy primarily with safety, but it cannot be promised that subsequently, it may be years afterward, the stump will not undergo calcarious or osseous change, which may excite sympathetic irritation in the other eye and require enucleation. Staphylomatous eyes are suited to Mules's operation.
6. Eyes which are greatly shrunken (excessive phthisis bulbi) should be enucleated, as they do not lend themselves with safety either to evisceration or to Mule's operation.
7. Painful blind glaucomatous eyeballs, or eyeballs blind from chronic nontraumatic iridocyclitis, may be treated by evisceration, with or without the insertion of an artificial vitreous, in the place of enucleation, with safety. They furnish one of the few indications for opticociliary neurotomy or neurectomy if enucleation or one of its substitutes should be refused by the patient.

8. Enucleation is preferable in very old patients, when the time element is important, and when physical condition is such that the prolongation of convalescence is undesirable.

9. Evisceration as a substitute for enucleation is a safe operation, and temporarily yields a stump which is better than the stump after ordinary simple enucleation. Subsequent shrinkage of this stump. however, ultimately renders the cosmetic effect of the operation no better than ordinary enucleation, while its inconveniences are much greater.

10. The best cosmetic results among the substitutes for enucleations, if successful abscissions are excluded, are secured by Mules's operation, which is only positively contraindicated by malignant disease, sympathetic ophthalmitis, extensive laceration of the sclera, and extreme phthisis bulbi. But it should be remembered that the primary excellent cosmetic effect of Mules's operation slowly lessens, owing to atrophy of the tissue of the orbit and sinking in of the artificial globe. This diminution in the volume of the stump is, however, much less marked than after simple evisceration.

11. Whenever a complete enucleation is performed, there is no objection to the implantation of a glass ball or of a piece of sponge into Tenon's capsule, except perhaps after enucleation for sympathetic and malignant disease, but it is doubtful if the ultimate cosmetic advantage of the operation exceeds that of a carefully performed enucleation.

12. There is no perfect substitute for enucleation, and necessarily this operation must continue to be performed in many, if not in the majority of cases. When it is performed according to the rules of improved technic, which include suture of the severed tendons to the conjunctiva, the cosmetic effect of the operation is primarily at least, as good as any of the substitutes, with the exception of Mules's operation and abscission, and is free from the objections which surround them. It seems likely that with further improvement in technic, and particularly in the manufacture of artificial eyes, the cosmetic effect will be enhanced and render less objectionable the operation of enucleation and less necessary the substitutes for it.

13. An enucleation which pays no attention to the preservation of the relationship between the conjunctiva, ocular tendons, and capsule of Tenon, is a brutal operation which should not be performed unless the disease of the globe and surrounding orbit is of such a character as to render this precaution impossible.

The foregoing conclusions seem to be warranted by the statistical information gathered in this paper, although I fully realize that some of them will not be acceptable to all of the 117 surgeons who have contributed their experience. For example, a number of operators undoubtedly would reject conclusions 2 and 4, although they are in accord with the surgical beliefs of others. So, too, the final sentence in conclusion 5 is in direct discord with some of the recorded opinions, but in equally direct accord with the views of others. In other words, in these conclusions I have endeavored to epitomize the opinions which have been expressed by the various surgeons, although necessarily it was impossible to construct a series of deductions which would be equally acceptable to all contributors. Personally, they seem to me to represent a safe line of practice. In those cases in which complete enucleation is not demanded—and in my opinion they are in the minority—Mules's operation, when successful, certainly furnishes admirable results, but I feel sure that although at the present time, from the cosmetic standpoint, it seems to be one of the best, if not the best, of the substitutes for enucleation, it is not likely to endure as an operative measure in ophthalmic surgery unless the percentage of failure is greatly reduced. I believe, as I have stated in conclusion 12, that improvement in the technique of performing the operation of enucleation and in the manufacture of artificial eyes will probably be so great in the future that this and other substitutes for enucleation will seldom be required.

## The Role of Toxins in the Production of Conjunctivitis.

Morax and Elmassian (Ann. d'Oculist., August, 1899), after detailing their experiments, sum up the general results. By means of continued instillation into the conjunctival sac they have produced conjunctivitis in the rabbit with the living and dead cultures of the gonococcus, the bacillus of Weeks, the diplobacillus and the staphylococcus; also with the filtrate of these cultures. These organisms never multiply in the conjunctival sac of the rabbit, and hence the inocculation of their cultures under ordinary conditions does not give a positive result: nevertheless, the conjunctiva does react in the presence of the toxins of the above microbes, and in a manner very similar to the human conjuctiva; but, absorption being very slow, the contact must be prolonged. There is always an interval of at least two or three hours between the commencement of instillation and the onset of the symptoms. In the case of the diptheria toxin this latent period is at least twelve to twenty hours. This is comparable with what happens after the instillation of jequirity, but a single drop of the latter applied for a few seconds suffices to produce the reaction. The reaction which the toxin sets up may persist a long time (this is the case in diptheria, and in the instillation of jequirity or of snake poison) or very soon come to an end, as in the case of the diplobacillus and the bacillus of Weeks. In the case of the gonococcus the reaction persists a little longer. The toxins elaborated by the gonococcus, Weeks' bacillus and the diplobacillus have a much more feeble and limited action than the diptheria toxin. Whilst in diptheria the action produced may persist 48 hours, or more, after the disappearance of the diptheria bacillus, in blenorrhea, acute and subacute conjunctivitis, the reaction strictly depends on the presence of the microbe, and ceases within a few hours of its disappearance from the conjunctival secretion.—American Journal of Ophth.

## Light from Microbes.

If the experiments now going on in France bear fruit, we may have our houses illuminated some day by billions of phosphorescent microbes, at a small cost. We have already printed a reproduction of a photograph taken by M. Becquerel by "living light," and M. Raphael Dubois is now working toward the practical utilization of this form of illumination. Says a notice in the Revue Scientifique (September 8):

It is well known the best light for illumination would be that which should contain the maximum quantity of radations of average wave-length with the minimum of heat rays and chemical rays, on condition that it should be practically and economically obtained. Now at present the illumination that comes nearest to this ideal is certainly that which is obtained with physiological or 'living' light. in many instances, on account of its special luminescence, it is very agreeable to the eye and absolutely perfect from the standpoint of vision; only the means of obtaining it are yet imperfect, especially as regards intensity.

Nevertheless, M. Raphael Dubois has placed before the public in the Palace of Optics, at the Exposition, practical results that are really encouraging, and he now communicates these to the Academy.

"To produce the physiological light with its maximum illuminating intensity, speedily and practically, and in as great quantity as may be desired, he conceived the plan of cultivating curtain luminous microbes or 'photobacteria' in liquid bouillon of special composition, and he established the following facts:

"When these liquids are stocked with good cultures in the mean limits of atmospheric temperature, luminous liquids are very quickly obtained. Placing these in glass vessels, preferably with plain faces, properly arranged, a room may be so brightly lighted that features of a person may be recognized at several yards' distance, print may be read, and time may be told by a watch, especially in the evening, when the eye has not been dazzled by full daylight, or after remaining a few minutes in a dark or feebly lighted room.

"The bouillons used by the author must contain water, sea salt, a ternary food, a quaternary nitrogenized food, a phosphated food, and traces of those mineral components that enter into the components of all organic matter. . . .

"He tried several thousands of products, and mixtures of them, and the foods that gave him the strongest light and that of longest duration were the following: Ternary foods: glycerin and mannite. Quaternary foods: peptones and asparagin. Phosphated foods: nucleins, phosphated lecithins, potassium phosphate.

"To sum up, M. Dubois has been able by the aid of these liquid bullions to light up a room with a light equal to that of full moonlight. But he hopes that the intensity of this illumination may be notably increased, and that the possibility of its practical utilization will become speedily recognized. He adds that the enormous industrial value of the brewing industry illustrates strikingly what we may expect from the activity of infinitely small organisms such as are these luminous microbes."—The Literary Digest, Oct. 13, 1900.

### Erratum.

In the July ANNALS the proper title for article written by William T. Shoemaker, M. D., is "The Relation of Tenon's Capsule and the Check Ligaments to Enophthalmos.—Report of a Case of Traumatic Enophthalmos," not Ex—as printed. See p. 391.

To the regret of the editorial staff of the ANNALS OF OPHTHALMOLOGY Dr. Wendell Reber has resigned his position thereon. The thanks of his confreres and of the readers of the journal are extended to him for the large amount of valuable work which he has done for this publication.

# BOOK NOTICES.

## The Refraction of the Eye Including a Complete Treatise on Ophthalmometry.

Davis, A. E., New York. (Adjunct Prof. of Diseases of the Eye in the N. Y. Post Graduate Medical School and Hospital, Etc. The Mac Millan Co., N. Y., 1900. Price. $3.00.)

The above volume which has just appeared from the press of The Mac Millan Co. is devoted largely to the practical use of ophthalmometer, the author reporting in detail many clinical cases, illustrating the practical points of this instrument.

While the book is especially adopted to beginners, it contains many points which cannot fail to be of value to the practicing ophthalmologist. The various forms of ametropia are taken up separately and many clinical cases cited, giving in each case a complete routine method of examination to be followed, the detailed reports of 150 cases are given, many of them being complicated cases that might be puzzling to the beginner.

The question as to the indications for the use of a mydriatic is taken up, the author stating that in his experience, taking cases as they come, he gets better results without the use of a mydriatic than with one (with the exception of strabismus cases), and the statement that the routine of examination, if carried out, will eliminate the indications for the use of a mydriatic in 99 per cent. of all uncomplicated cases of errors of refraction will hardly receive the indorsement of many of our well known ophthalmologists.

The chapter on Exceptional Cases of ametropia contains many valuable points and clinical cases that may serve to explain some of the puzzling cases that occasionally arise in refraction work.

The chapter on removing glasses in high degree of myopia contains some good suggestions.

The volume concludes with an appendix in which the mechanism of the various forms of ophthalmometers is fully discussed.

W. R. Murray.

## The Ophthalmic Patient—A Manual of Therapeutics and Nursing in Eye Diseases.

Friedenberg, Percy, M. D. (Ophthalmic Surgeon to the Randall's Island and Infant's Hospital; Assistant Surgeon, New York Eye and Ear Infirmary. Illustrated. Published by The MacMillan Company, New York. 1900. Price, $1.50.)

This manual, as is evidently intended by the author, will supply a long felt want to ophthalmic surgeons as a guide for the proper nursing of eye patients; it is not so much needed in an eye hospital where that particular branch of nursing is taught, but in the wards of general hospitals where the surgeon no sooner has a nurse instructed how to intelligently take care of his patients as he wishes it done, than she is through with that part of her training and passes on, leaving a novice in her place and his work begins all over again. While the book goes decidedly beyond this (and that is the only fault that can be found with it, if it is intended as a manual of nursing) it takes up briefly but comprehensively the nice little details, which if a nurse does without being asked time and again, by the surgeon to do, not only pleases and aids in the rapidity of his work, but adds to the comfort of the patient in operations or dressings.

The manual contains ten chapters as follows:

Chapter I, Eye Wards; II, Hospital Routine; III, Ophthalmic Therapeutics; IV, Ophthalmic Therapeutics (continued); V, Asepsis and Antisepsis; VI, Arrangements for Ophthalmic Operations; VII, Post-Operative Nursing and Treatment; VIII, Nursing of Different Operations; IX, Dressings and Bandages; X, Eye Shades, Dark Glasses, Artificial Eyes, and an appendix with illustrations of various instruments used in ophthalmic surgery.

Chapters V, VI, VII, and VII are excellent, the rest is more in the nature of a text book for ophthalmic students.

Chapter I, takes the wards of the New York Eye and Ear Infirmary as an example and is a little more elaborate in eye and ear detail than we can expect in a general hospital. NELSON M. BLACK.

### The Law in its Relations to Physicians.

TAYLOR, ARTHUR N., LL. B. (New York Bar. Cloth. pp. 520. Price, $2.00. New York, D. Appleton & Co.; 1900.)

This volume is largely a reprint of separate articles by the same author from the New York Medical Journal, which have been condensed and collected into this volume. Medical Jurisprudence is a subject which has a voluminous literature. The field of the degree of responsibility assumed by the physician in taking any given case and what the patient has a right to expect from him and his liability for neglect or inability to properly treat any given case, have been fully treated by experts. But the relation of the patient to the physician, the legal rights of the latter, the protection that he is given by law, his right to compensation for services and methods for forcing recovery for same have been, until now, practically ignored. Medical men have often had occasion to see or hear of infringements upon the physician's rights and, indeed, there have been cases of arbitrary decisions which have practically abrogated them, due to the incompetent knowledge possessed by some judges and attorneys and to the false positions in which physicians are sometimes placed before juries, through their own ignorance or that of the jurors. Indeed, in the preface the author states that the reason for this book was that, in looking over the pages of a current legal journal, his attention had been caught by the report of a recent case, in which a physician, not understanding his rights in a certain matter, had violated well established legal principles and was held by the jury to respond in substantial damages.

In the introduction a clear, concise and simple ketch is given of the origin and development of our laws with particular reference to those applying to the medical profession. Statutory enactment is required before the practice of medicine can be made subject to law; the old common law not taking any cognizance of it. Each state in the Union has its own medical laws and a brief resumé of those now in force, is given in this book. The constitutional validity of the various statutes is fully discussed and the unconstitutional features of particular acts are shown. Of particular interest to specialists is the fact that we commonly termed "unethical or unprofessional conduct" by reason of advertising is not amenable to law, for it is held that it is not injurious to public morals or a menace to the general welfare. The terms of doctor, physician and surgeon and the meaning of practicing medicine are well defined in the book, and the illegality of the so-called faith healers, Christian science and clairvoyant is duly shown. The chapters dealing with contract relations existing between physician and patient, the liability of third parties to make good what the patient, directly treated, refuses through inability or indisposition are clearly shown. Chapters follow on civil mal-practice and the confidential relations existing between the physician and patient. The work is not only suited for the medical profession but should be welcomed by attorneys at law and is likewise interesting to the public at large. It is written in the popular style, relatively free from technical terms, well printed and replete with references. H. V. WÜRDEMANN.

### Physiologic Optics.

TSCHERNING, DR. M. (Adjunct Director of the Laboratory of Ophthalmology at the Sorbonne, Paris. Authorized translation from the original French edition, specially revised and enlarged by the author, by CARL WEILAND, M. D. former Chief of Clinic in the Eye Department of the Jefferson Medical College Hospital of Philadelphia, with 212 Illustrations, 344 pp. Published by The Keystone, 1900. Price, $3.50.)

This subject is one on which the master minds of science have arduously labored and the results are the foundations upon which are based not alone the exact sciences of astronomy and mathematical optics but these principles are in constant use in all practical work which calls for the use of any instrument containing or composed of lenses or any trade or profession which has to do with them.

As far as the application of this subject is made in ophthalmology the works of Helmholtz, Donders and Landolt have until now sufficed. Tscherning has himself been a very active contributor to optics in its relation to medical practice. All his original work, especially on ophthalmometry, the catoptric images of the eye, astigmatism, spherical aberration and accommodation, as well as that of other investigators is described in the book with great cleariness and exactness and as free from tedious mathematical encumbrances as could be done for a work of this class. Instead of long formulae, the experiment and simple geometrical deductions are employed to explain the phenomena observed. Compared to the standard works above noted the explanations of this author seem very simple.

But in the practical application of these principles, many of us from experience cannot agree with the author; for instance, we find fine results in the correction by lenses of low degree of ametropia, particularly hyperopic astigmatism. We consider that the progressive myope is a pathologic person and requires systemic treatment and constant correction of his refractive error. Other ideas of the anthor as regards non use of cycloplegics in estimating errors of refraction are not in accord with American practice.

The translator has evidently followed the original very closely. Too faithfully in fact, for in places the English is rather clumsy. The index might well be amplified to double its present size. Typographic errors are few and may be largely eliminated in the next edition which I hope to see speedily follow this one. The book work is well done. I am sure the work will be well received and it should find a place with every working ophthalmologist.

H. V. WÜRDEMANN.

### A Manual of Personal Hygiene.

PYLE, WALTER L., A. M., M. D, Editor. (Published by W. B. Saunders & Co., Philadelphia, 1900. Price, $1.50.)

In this octavo volume of 344 pp. the editor has, with the assissistance of six other contributors, brought together in plain language —not only suitable for both the medical student and the physician but as well for the average person of education—the best means for developing and maintaining physical and mental vigor. It is a real "guide to health" given by authorities on the subjects which are considered therein.

The digestive apparatus is treated by Chas. G. Stockton of Buffalo with a brief consideration of the physiology of digestion, the hygiene of the teeth and that of the gastro-intestiual tract. In this chapter the little matters of daily detail, such as cleansing of the teeth, toothbrushes and powder, the causes of variation in appetite, regulation of meals, diet, proper cooking, effects of various beverages, times of eating, etc., are given unusual attention.

The hygiene of the skin and appendages by G. H. Fox of New York, considers the anatomy and physiology, bathing, care of the complexion, clothing, care of hair, etc., giving attention to the nice little points that are attended to by the hygienic minded individual.

The vocal and respiratory apparatus is attended to by E. Fletcher Ingals of Chicago with clear anatomic and physiologic descriptions of its functions. The causes and prevention of nasal disease and tuberculosis are well worth reading by members of any household.

The hygiene of the ear, by B. Alex. Randall, considers the causes of deafness and not only disproves many popular fallaces connected therewith but deals with prevention and household cure of minor complaints.

The principal chapter of special interest to the readers of these ANNALS is that on hygiene of the eye by Walter L. Pyle, who first gives anatomic, physiologic and pathologic descriptions of the various portions of the subject connected therewith. Ametropia and eyestrain are clearly discussed with their various causes, influence upon general health and methods of prevention. Visual tests, care of eyes and school hygiene, illumination, effect of veils, etc., spectacles and eyeglasses are given careful consideration. Several paragraphs are devoted to the proper use and necessity for correcting lenses; the optician is put in his proper place, that of the maker and seller of lenses.

Hygiene of the brain and nervous system is by J. W. Courtney of Boston. The case of the child is a subdivision which is well given. Neurasthenia—overwork and sleep are likewise discussed.

Physical exercise by Z. N. Stewart of Cleveland is a scientific and plainly worded guide to physical development.

The book is one that may be safely recommended to heads of households for family reading and will also be useful to the physician and student. H. V. WÜRDEMANN.

### Manual of the Diseases of the Eye for Students and General Practitioners.

MAY, CHARLES, H., M. D. (Chief of Clinic and Instructor in Ophthalmology, Eye Dept. Col. of Physicians and Surgeons Med. Dept. Columbia University, New York. With 243 original illustrations including 12 colored figures. Published by William Wood & Co., New York, 1900. Price, $ ...)

By the publication of our confrére May's work, another manual, well adapted for teaching purposes has been added, to a somewhat over crowded field. But the author's work has the special merit of being brief and clear and yet full of facts, none of which should remain unknown to the medical student or general practitioner of medicine. It claims only to be a means of supplying a foundation to which further knowledge may be added by reference to more extensive and comprehensive text books; and such the book is. I shall personally recommend it, together with the manuals of de Schweinitz and of Jackson, to undergraduate students and to those general practitioners who need but a superficial knowledge of ophthalmology. As with Jackson's book the author lays particular stress upon a routine and complete method of examination in every case, then by avoiding the sometimes brilliant snap diagnosis that oft times falls short of their mark. Diagnosis is the greater and important part of practice, the right treatment will follow if the former be properly made. The typical therepeutic formula are advised; some of the newer remedies, such as holocain for local anesthesia are given, but no mention made of its use in collyria for antiseptic and anesthetic purposes; chloretone and extract of supra-renal capsules are not mentioned. A glaring defect to my mind is the use of the old fashioned apothecaries system of weights and measures. The metric system is the scientific one and should be the standard for all new candidates in the art of medicine. The printer's work is good and the illustrations aid in the explanation of the text. A very complete index is attached. H. V. WÜRDEMANN.

### Embryology of the Human Eye.

NUSSBAUM, M., PROF. Bonn, Chapter VIII of Graefe-Saemisch. Handbuch der gesamten Augenheilkunde, 2nd edition, entirely rewritten, 79 pages, part of Nos. 14 and 15, Leipzig, 1900, Wilhelm Engelmann. Subscription price of each No. 2 Mark. 50c.

The time for an exhaustive treatise on the embryology of the human eye has not yet arrived. Since the appearance of the first edition of this magnificent handbook, for which Manz wrote this chapter. our knowledge of human embryology has continuously progressed, chiefly through the efforts of His and his pupils. But even to-day, on account of the still defective human material, we have largely to draw on comparative embryology of the vertebrates. The rule that embryology is a repetition of phylogeny, generally adopted within the last 30 years, still holds good, but modified. To illustrate this, N. at first describes some different types of development of the eyes of arthropodes, mollusks and cephalopodes with drawings. Then the initial stages of the visual apparatus of the chick, mole, petromyzon and man, with reproduction of pictures from His' anatomy of human embryos, are demonstrated. A picture of the model of Manz-Ziegler very clearly shows the relation of the secondary optic vesicle to the primary with fetal cleft and optic stalk.

The closure of the fetal cleft in man takes place in the 6th or 7th week, in fish, reptiles and birds its walls grow toward the interior and form the campanula or pecten. The inner layers of the retina develop from the inner wall of the secondary optic vesicle by proliferation, shifting and changes of form and size of the cells. The proliferation takes place by mitosis of the blastema cells, which correspond to the later layers of outer granules, and by differentiation of the several layers, while the mitoses within the layers produce only a secondary or additional multiplication of the cells. From the innermost cells processes develop toward the optic stalk, forming the layer of ganglia and optic fibres. As to the first appearance of centrifugal fibres in the retina so far nothing is known. Animals which are born blind, like cats and rabbits, have no rods and cones when born. On the fourth day after birth small protuberances are noticeable at the limitans externa, from which small rods grow on the eighth day, shortly before the palpebral fissure opens, and increase in size by augmentation of the plates of their outer parts. The pigment epithelium takes its origin from the external wall of the secondary optic vesicle. His demonstrated optic fibres starting from the ganglion cells of human embryos five weeks old. The optic stalk serves only as path for the optic fibres, and the author proved their presence (in salmon embryos twenty-nine days old) in its peripheral portion, while lacking in the central portion, thus showing undoubtedly that the fibres first noticeable are centripetal, in accordance with W. Müller, Keibel and Froriep (in other animals).

Chiasma and the radiation into the brain are formed later. The lumen of the optic stalk of man is obliterated in the third month, its cells proliferate as interstitial tissue between the nerve bundles. As this occurs in mammals earlier than in the other vertebrates, it may explain the difference of crossing in the chiasma, which in the former occurs in single bundles, in fish in toto. The sheaths originate in the mesoderm, but the time of formation of the medullary investment of the human optic nerve has not yet been determined.

The development of the lens (from the ectoderm) is fully discussed in 14 pages. His found the first sign of a lens pit in a human embryo 5 mm. long as shown by a drawing; von Bambeke's and Koelliker's illustrations of the still open pit and its funnel-shaped closure in embryos of four weeks are also reproduced. Human material is still incomplete, whereas we have a series of very satisfactory investigations in mammals, in the different species of which the development of the lens varies. For a better understanding N. at first describes the development of the lens in the other classes of vertebrates following his own researches, when speaking of the salmon, then of the chicken, bat, mouse, rabbit, which is of the same type as in man, giving due importance to the extensive investigations of C. Rabl in comparative embryology of the lens. The development of the lens in all classes of vertebrates shows deviations in two directions, viz., with regard to the shape in which the lens separates from the ectoderm and the manner in which the cells of the separated portion are utilized in the completed lens. In selachii and teleostei, for instance, the material for the lens separates as solid bud, afterward becoming hollow, the lens of the other vertebrates forms a vesicle at the time of separation, but in all it is built only from the basement layers of the ectoderm, not from its covering layer.

The double layer of pigment on the posterior surface of the iris and the sphincter pupillae originates from the cells of the optic vesicle, the stroma of the iris and all other portions of the globe, except retina and lens, from the mesoderm. The pupillary membrane is absorbed in the center as far as to the margin of the optic vesicle and thus creates the pupil. In man it exists from the 3rd to the 8th month, but in mammals which are born blind it disappears with the opening of the palpebral fissure. From the same layer as the pupillary membrane the parenchyma of the cornea develops by cleavage, which later on forms the anterior chamber, whereas the epithelium of the cornea grows from the ectoderm.

The development of the lids from the skin of the head, the cilia and Meibomian glands, the lacrymal organs is described in detail. Considering the metameria of the skull in relation to the law of Bell, with Gegenbaur and van Whijhe, the 3rd nerve would arise as the ventral root of the ophthalmic branch of the 5th nerve, the 4th nerve of the remaining 5th nerve, the 6th of the acustico-facial nerve. The direction of the growth of the ocular muscles is recognized from the point of entrance of their nerves and the direction of the intramuscular ramifications. The muscles extend to the eyeball secondarily, which causes a great variability of the points of their insertions at the sclerotic in different individuals.

The bloodvessels of the eye show at first the character of capillaries and enter at the neck of the lens and the fetal cleft between lens and distal wall of optic vesicle, developing hyaloid and ciliary arteries. In the sixth month the hyaloid artery in man runs to the lens, but its ramifications into the vitreous, which existed from the 3rd month on, have disappeared. We have no definite observations on the origin of the retinal vessels in man, but O. Schultze proved on numerous mammals, that from the optic nerve they spread from the choroidal vessels in a special membrane, the membrana vasculosa retinae, toward the ora serrata. With the disappearance of the vessels of the vitreous a communication of the gradually opening retinal vessels with the stem of the hyaloid artery is initiated. They grow further into the optic nerve, and the hyaloid artery obliterates.

After describing the development of the orbit, N. gives a table of measures of the growth of the eyes of human embryos, according to Ricke, and a bibliography of 142 numbers. 58 very good drawings in the text (the first edition had only 9) help materially the understanding of this intricate subject, presented very clearly and exhaustively according to the most modern views to which the author's own investigations contributed a considerable share.

C. ZIMMERMANN.

### Malformations and Congenital Anomalies of the Eye.

VON HIPPEL, E., PROF., Heidelberg. Chapter IX of Graefe-Saemisch, Handbuch der gesamten Augenheilkunde, 2nd edition, entirely rewritten, 136 pages with 34 figures, partly colored, in the text and on 4 plates. Nos. 18 and 19, Leipzig, 1900, Wilhelm Engelmann. Subscription price of each No. 2 Mark. 50 cents.

This is an entirely new work, only a few clinical descriptions are taken from the first edition of Manz. The author begins with an introduction on general etiology. Disturbances in the development of the eye may occur from the commencement of its formation until birth. It is not always possible to infer from a deformaty the time of its origin, but quite often anomalies undoubtedly manifest certain phases of development, e. g., those connected with the closure of the fetal cleft or the transformation of the adjacent tissues. Even after the form of the eyeball is completed, it may undergo changes in intra-uterine life, which must chiefly be considered as fetal diseases. The malformations and congenital defects of the eye, although of different forms, show a close relation to each other, and the frequent simultaneous occurrence of other malformations of the body finally suggest common causes which, acting at different times and with varying intensity upon the organ in the state of development, produce such variegated aspects. Yet we are far from giving a uniform etiologic demonstration. Internal and external causes may interfere with the plastic tendency and thus create arrest of development as shown by experimental teratology. Hereditary anomalies may be due to the condition of the germ itself or depend upon morbid affections of the placenta and mucous membrane of the uterus. Heredity through several generations is rare. In animals congenital anomalies of the eyes have been observed after eye diseases in the parents which have been experimentally produced. Infections of fetal eyes from the surface or endogeneous, by pathogenic microörganisms, may undoubtedly occur, as their anatomic examination revealed the same conditions as in diseases encountered after birth. As in extrauterine life morbid processes of the eye, set in during fetal life, might subside leaving traces in the appearance of anomalies of development. Traumatism, pressure acting for sometime, especially by abnormal conditions of the amnion certainly play an important part. The supposition of a direct trophic dependence of the eye on the brain is only admissible in the very earliest stages, as shown by the development of the eyes in anencephalia.

The 2nd part deals with malformations of single parts of the eye, first of coloboma. The investigations of the last 20 years showed that congenital defects, clinically and anatomically akin to the typical colobomata situated in the direction of the fetal cleft, may also occur in all other directions and are called atypical. The cases of atypical coloboma of the iris published are enumerated. Some occurred without, others with coloboma of the choroid in the same, and others in a downward direction. Four colored pictures on 2 plates show the different types of coloboma of the choroid. The atypical ones are extremely rare, and some differ clinically from the typical only by their situation. With regard to the representation of the single tunics within the coloboma a great variety exists. Perception of light in the corresponding portion of the visual field proves the existence of retinal elements, but all kinds of transitions take place between absence of the retina and normal condition, whereas the pigment epithelium is mostly wanting. The choroid is missing, but some observed the occurrence of the lamina fusca. In rare cases signs of recent or old inflammations in the area of the coloboma were marked. Coloboma of the ciliary body so far was observed only downward. Lieberkühn proved its regular occurrence in the Cochinchina fowl. Another colored plate shows a very large coloboma of the macula. The retina is preserved in most cases, but the pigment epithelium and the choroid are wanting. Great differences occur in vision, visual field, and refraction, which is mostly myopic. Only very little is known of its anatomy.

About 50 cases of coloboma of the entrance of the optic nerve are published, but anatomic researches revealed that from the ophthalmoscopic pictures it is impossible to form definite views as to the anatomic conditions of the optic nerve and its sheaths. 20 per cent. of the cases showed micropthalmus. If we consider only those cases which have been carefully examined with the microscope they show that defects of the optic nerve and its sheaths may be entirely lacking, and, if present. they could only explain the ophthalmoscopic picture in a case of Ginsberg. In all others the ophthalmoscopic deep ectasia was owing to a cystic ectasia of the wall of the globe next to the normal optic nerve, approaching the eye obliquely from above. The foramen of the sclera is always considerably enlarged. The ectasia is devoid of choroid and pigment epithelium, but contains retinal tissue. The anomalies of the optic nerve itself consist in a deviating arrangement of the central vessels and in defects of the nerve and its sheaths or of the lamina cribosa. Thus a large portion of the cases of coloboma of the optic nerve are nothing else than circumscribed ectatic coloboma of the choroid, and v. H. proposes to discard the expression coloboma of the optic nerve and to call it coloboma of the entrance of the optic nerve.

The significance of the downward conus as rudimentary coloboma of the optic disc or the adjacent choroid is not sufficiently proved, it requires more anatomic investigations.

Coloboma of the lens shows three different types; indentation of the margin of the lens or transformation of an arc into a straight line, or elongation of the lens downward into a point with diminution of the antero-posterior diameter of that portion. The first exact histologic examinations of coloboma of the vitreous were made by Hess. Coloboma of the zonula is mostly associated with coloboma of the ciliary body.

The different opinions as to the etiology of colobomata are thoroughly discussed, and from the facts with regard to th e typical, the following resumé is given: In a portion of them it can be proved that complete closure of the fetal cleft was prevented. In others the uninterrupted continuity of the retina in the coloboma showed that the cleft was closed. The assumption of a retarded closure for the explanation of coloboma is not corroborated. A primary disturbance in the tissues adjacent to the fetal cleft might explain the etiology of the typical colobomata, irrespective of closure of the cleft, but we have no satisfactory conception of the nature of such disturbances since the surmise of circumscribed inflammation at that point is not proven and improbable. A general affection might interfere with the closure of the fetal cleft by impeding the growth of the whole globe.

If we assume an analogous disturbance in the medullary plates at the region of the macula or any other place, we could explain the colobomata of the macula and the rare antypical ones. Some may not even be congenital, some the product of local inflammation, but so far we are not entitled to such generalization. Some may be explained by large hemorrhages during delivery. The defects of the lower portion of the optic nerve with lack of the central vessels probably are due to nonclosure of the optic groove. A typical development of the mesoderm, which connects the interior of the optic vesicle with the medullary plates, in the shape of solid bands containing bloodvessels, may be the cause of coloboma of the iris, as anatomically proven by Hess. Coloboma of the lens may be of traumatic origin or caused by pressure through persistent branches of the vascularized lens capsule.

Eyes affected with irideremia very frequently show intraocular complications, but no disturbances of accommodation. In every case, which had been histologically examined, the iris was preserved as a short stump, either projecting free into the anterior chamber or tightly adherent to the posterior surface of the cornea. Some of these eyes were glaucomatous. All attempts to explain the etiology of irideremia are hypothetic.

The essential difference between persistent and normal pupillary membrane lies in the marked toughness of the tissue of the former and its abnormal pigmentation, and this is probably the cause of its non-resorption. Its threads which arise from the anterior surface of the iris were in some cases adherent to opacities of the cornea, the remnants of former intra-uterine inflammations, which had led to perforations of the cornea. This, of course, does not explain the persistence itself.

From an anatomic examination of an own case of very marked corectopia downward and inward and displacement of the lens upward and outward, v. H. found that the excentric position of the pupil was caused by traction, as the narrow nasal portion of the iris was three times as thick as the extended opposite one, and he attributes it to analogous mechanical conditions as in cicatrized prolapse of the iris, but postpones the proof of it to a future communication.

v. H. does not believe in a distinction of congenital persistent hyaloid artery from visibility of the canal of Cloquet since the alleged signs of discrimination are too uncertain. Cases, in which a bloodvessel arising from the optic disc runs a certain distance into the vitreous, turns and ends as artery in the retina or in the disc, are not to be considered as examples of persistent hyaloid artery, although described as such, since the hyaloid artery never shows such course. There is no doubt that the opaque nerve fibres of the retina are owing to a congenital predisposition, but from anatomic investigations on man and rabbit we know that the marrow sheaths of the retinal fibres develop after birth.

In part III malformations of the whole globe are described, commencing with congenital microphthalmus. The etiology of the latter is considered as due to an arrest of development from intrauterine inflammations (Deutschmann), or to an impediment of growth caused mechanically by atypic formation of mesodermal bands (Hess). The formation of the latter must occur in a very early stage, whereas the inflammatory changes have the same character as in the eyes of adults. Some cases are due to congenital phthisis bulbi, and form the transition to anophthalmus. In the explanation of the etiology of the latter v. H. follows the opinion of Manz, expressed in the first edition, that it is due to phthisis bulbi from fetal diseases, and attributes great importance to purulent inflammations, as observed by Haab. Anomalies of the nerves in such cases are apparently due to secondary degeneration. (The reviewer described such a case, not mentioned here, in the Arch. of Ophth. XXII, p. 340.)

To-day it is a well established fact that the orbitopalpebral cysts, accompanying anophthalmus, are directly related to the development of the eyeball, with which they communicate by more or less wide openings, and the essential parts of which they contain. They are nothing but extremely ectatic colobomata. v. H. gives in extenso the differing views of von Arlt and Kundrat, Mitvalsky and Ginsberg on the etiology of the cysts, but a uniform explanation meets with the same difficulties as that of coloboma.

Meningo-Encephalocele of the eyeball is interpreted according to Krückmann, as prolapse of separated portions of the brain through the fetal cleft into the interior of the globe with consequent destruction of its normal contents.

Of the different explanations of cyclopia v. H. inclines to the assumption of a secondary fusion of 2 at first normally developed and perfectly separated optic vesicles, referring to the recent experiments of Born on larvae of amphibia, which directly proved such a fusion of like organs at a very early stage of embryonic life.

Congenital opacities of the cornea, leucoma, staphyloma are due to fetal diseases, as shown by the clearing of congenital parenchymatous opacities after birth. v. H. furnished the anatomic proof, that such opacities may start from the posterior surface of the cornea, and in a case of ectasia and enlargement of the cornea he found an ulcer of the posterior surface of the latter. He therefore considers megalocornea, megalophthalmus, buphthalmus, and keratoglobus caused by internal ulcers of the cornea. As final result of the same morbid process in both eyes, in the one megalophthalmus with clear cornea, wanting excavation and good vision was observed, in the other hydrophthalmus with opacity of cornea, increased tension, excavation and amaurosis, i. e., secondary glaucoma.

Coloboma of the lids is due to disturbance of development respectively destruction of the normally developed lids by amniotic synechiae and bands. The cutaneous formations of the eyeball and lids, i. e., bridges, dermoids, lipodermoids and those resembling pterygia are to be considered as remnants of anatomic strings. Recent anatomic examinations of cryptophthalmus undoubtedly prove that it is caused by adhesions of the lids to the eyeball, in consequence of severe destructive inflammations chiefly localized at the surface of the globe, i. e., total symblepharon. v. H. leaves it undecided whether narrowness of the amnion cap, as supposed by Kundrat and v. Duyse, may alone produce this anomaly. Partial symblepharon occurs in coloboma of the lids, ankyloblepharon in many cases of anophthalmus and may be attributed to the missing pressure of the growing globe, which possibly is of importance in the normal separation of the lids.

Then microblepharia, entropium, ectropium, ptosis and congenital distichiasis, which by Kuhnt is considered as a heterotopic anomaly of formation, and epicanthus, are discussed. Congenital anomalies of the lacrymal organs are most likely due to fetal diseases.

v. H. concludes with a chapter on albinism, melanosis and heterochromia.

The subject is very conscientiously treated with a spirit alike progressive and critical, and the reader will be very favorably impressed with the objectiveness of the author, who does not shrink from plainly confessing our ignorance when nothing is offered but hypothesis in the explanation of some phenomena, although ventilating them with full credit to their inventors. The resumé at the end of each chapter is always clearly reduced only to well established facts. Thus it is a most reliable and fascinating work which adds not a little to the splendor of the famous handbook.

C. ZIMMERMANN.

### Microscopic Anatomy of the Optic Nerve and the Retina.

GREEFF, R., PROF., DR., Berlin. Graefe-Saemisch, Handbuch der gesamen Augenheilkunde, 2nd edition, conclusion of chapter V, No. 22, Leipzig, 1900, W. Engelmann. Subscription price, 2 Mk. 50 cents.

The first part of this elaborate work of Greeff we have reviewed in the July No., page 563. The present No. is the conclusion and contains a biliography of 271 numbers.

The amakrine cells or spongioblasts show three chief groups: stratiform, diffuse and association cells. The inner plexiform layer is the border between the second neuron of the inner nuclei and the 3rd neuron of the ganglion cells. In vertical sections it represents the nodal points and transverse sections of fine nerve fibres and therefore appears granular. The VIII, layer of the ganglia is single in the largest portion of the retina, but in the neighborhood of the macula it shows three, and in the macula 8 to 10 rows of various sizes. The latest literature on their structure is given in detail. Their processes spread into the plexiform layer. The complicated course of the optic fibres in the IX, layer is described according to the investigations of von Michel and illustrated by a very good drawing. The recent researches of Dogiel showed that the papillomacular fibres do not end at the macula, but continue in a very thin layer of finest axis-cylinders, All over, the nerve bundles have a plexiform character and the fibres are mere axis-cylinders, devoid of myeline.

The membrana limitans interna is not a membrane proper, but is formed by the bases of the radial fibres. The latter and the spider cells belong to the neurolgia of the retina, which envelops the nerve cells like silk on electric wires and secures insolated conduction of the optic impressions.

A special paragraph is devoted to the minute description of the macula lutea. At the bottom of the fovea the cerebral layers are reduced to a minimum, only the cones are represented, which are very thin and long and closely crowded. To each of them belong one bipolar and one ganglion cell, which lie in the wall around the fovea. Their fibres take an oblique course and constitute the characteristic stratum of Henle. The depression, forming the fovea, apparently serves to enlarge the surface, so that more visual cells find room, than if it were flat.

In the chapter on the ora serrata G. emphasizes that the processes of the latter are not pathologic, as asserted by Schoen, but are found in the newborn. The cells of the pars ciliaris retinae resemble very much glandular cells and are intimately connected with the secretion. Peculiar to the capillaries and veins of the retina is an adventitia. The lymph channels of the retina are perivascular, blood and lymyh currents in the capillaries and veins are separated by a simple thin endothelial membrane. Finally G. sums up the connection of the nervous elements of the retina, whose continuity has been established by the admirrble investigations of Ramon y Cajal and Dogiel. C. ZIMMERMANN.

### Ocular Therapeutics.

GOLDZIEHER, DR. WILHELM. Professor der Augenheilkunde, Budapest. Therapie der Augenkrankheiten. Für praktische Aerzte und Studierende, 2nd edition, entirely rewritten. 480 pages, Leipzig, 1900, Verlag von Veit & Co. Price, 10 M. $2.50.

Among the several works on ocular therapeutics published within the last few years Goldzieher's book deserves a foremost place, in as much as it does not strictly adhere to the title, but gives detailed clinical and anatomo-pathological descriptions, the thorough knowledge of which must precede a sensible therapy. He does not present a critical review of the various modes of treatment, but only what he can endorse from his own experience gained within 25 years on a very large material as oculist at the St. Johannes Hospital and the general policlinic. With special care those affections are dealt with which the general practitioner is chiefly called upon to treat, as the infectious and scrofulous ophthalmia, and sequelae of injuries, etc.

Seventy-seven pages are devoted to diseases of the conjunctiva. G. warns against the protracted use of solutions of cocain in conjunctival catarrh, on account of the subsequent trophic disturbances of the corneal epithelium, and, if it be desired, he recommends its application in the form of a salve with natr. sozoiodol. (Here we miss the mentioning of holocain which to us as well as others has rendered excellent service as an anesthetic and antiseptic in very painful superficial corneal affections—Reviewer.) Among the astringents G. has a predeliction for irrigations with 1 per cent. solutions of zincum sozojodolicum, which at the same time is a weak disinfectant. The treatment of the nose is of great importance in spring catarrh besides the removal of the excrescences with the galvanocautery. For the prophylaxis of blennorrhea neonatorum antiseptic vaginal irrigation of the pregnant, washing of the surroundings of the eyes of the newborn with sublimate solution 1:1000, and Credé's method are recommended if a gonorrhoic fluor of the mother is ascertained or even likely, and for the treatment, irrigations of hypermanganate of potash (1:2000) or zincum sozojodolicum in 1 per cent. solutions, pressed out from cotton soaked with them, to avoid any mechanical injury of the cornea with irrigators or syringes G. has conscientiously tried the recent substitutes for silver, as argentamin, itrol and protargol in all forms of profuse conjunctival secretions, but has seen absolutely no benefit, so that he returned to nitrate of silver, which he considers as the only remedy to be taken seriously.

In the treatment of diptheria the author adheres to the principle to convert the diphtheritic stage into the 2nd, the blennorrhoic, by warm applications. Fresh lemon juice influences the pseudomembranes beneficially. As soon as the cornea is affected antitoxin is useless. Its subconjunctival injection, however, has to be considered. A protective bandage on the healthy eye is not to be omitted in diptheria, whereas in blennorrhea it is required only in a few cases.

Thirty-nine pages are allotted to trachoma, its pathologic anatomy, course, differential diagnosis and treatment. It is defined as a chronic infectious disease of the conjunctiva, with relapses, and affections of the cornea, on the anatomic base of lymphoid (adenoid) infiltration of the mucous membrane, submucous tissue and tarsus, frequently with swelling of the follicles, and final cicatrical shrinking of the whole conjunctival tract. G. discerns two chief types according to the predominance of the blennorrhoic and follicular character. The differential diagnosis from follicular conjunctivitis, lymphadenitis of the conjunctiva, an affection observed and so called by Uhthoff, Vossius and G., tuberculosis and syphilitic tarsitis is closely entered upon. But we cannot agree with the author, when he imputes the follicular swelling in atropin conjunctivitis directly to the influence of this alkaloid, as it is simply an infection and does not occur after thorough sterilization of the solutions. Also the following statement as to the etiology of trachoma will not be generally accepted: For an observer who has the opportunity to constantly see numerous cases of trachoma, especially in regions where acute blennorrhea of the conjunctiva is not rare and who is enabled to study carefully so called trachoma-epidermics from the start, there can be no doubt that the infectious agent of trachoma is identic with the gonorrhoic and is produced by the mucous membrane of the urogenital tract. His reasons are given in extenso and the observations of Sattler and Fuchs in Egypt utilized to that end. The effectual measures against trachoma are cultural, all others, except the foundation of very numerous eye hospitals, are illusory. The principle of the modern treatment of trachoma is, not to wait for the slow transformation of the infiltration as of old, but to remove it from the conjunctiva in the earliest stages and most rapidly. The great progress obtained by surgical treatment, viz., the galvano-cauterization, the use of the roller forceps of Knapp, and G's. own method of excisions of conjunctiva and tarsus is duly set forth. The galvano-cauterization is also the chief remedy for pannus, and its employment is minutely described.

In chapter II the diseases of the cornea and their treatment are excellently dealt with in 84 pages. The pressure bandage, withdrawal of blood, atropin, cocain and the other mydriatics, fluorescin are considered in special paragraphs. The application of astringents and caustics in catarrhal ulcers is strictly contraindicated. G. prefers scraping with the spud, warm applications in form of cataplasms and by means of the Japanese box (Dose), which is heated by compressed coal. Eserin in abscess of the cornea is of value only before imminent perforation in the more peripheral portions to obviate prolapse of iris, it does not protect the cornea from this condition even if applied early. In severe cases paracentesis and atropin are the best remedies. In neuroparalytic keratitis and similar affections of the cornea, occurring in the soporous conditions of patients suffering from typhoid, meningitis, encephalitis, pneumonia, etc., the application of moist dressings to the eye is of greatest importance. After resection of the 5th nerve according to Krause the cornea remained intact in many cases. Phlyctenular kerato-conjunctivitis is one of the most important chapters for the practitioner and is very thoroughly discussed. The amblyopia ex anopsia ascribed by G. to blepharospasmus continuing for some time is rather due to the pathological factor mentioned as an adjuvant, viz., the compression and the consequent impediment of the circulation of the eyes. If phlyctenular keratitis does not readily yield to the ordinary treatment, G. advocates the use of the spud or galvano-cautery, from which he saw in many cases a remarkably good effect. The general treatment also receives due consideration. G. concedes that some cases of parenchymatous keratitis may be of tubercular origin, but this does not exclude syphilis, since a tubercular infection may easily take place in an organism weakened by hereditary lues. Therefore the chief remedy is mercury.

In opacities of the cornea besides the known drugs the instillation of a solution of iodide of potash is recommended, and for the improvement of sight a very careful examination for Astigmatism.

A pressure bandage applied to both eyes for four or five days is considered essential for the success of pterygium operations. G's. chief method is galvano-cauterization. With regard to the author's statement that in injuries to the eye by lime the application of water must be avoided except concentrated solutions of cane sugar, although, from a personal communication by Prof. L. Liebermann, doubtful in their action, we would refer the reader to the recent work of Andreae (reviewed by us in the April No., page 377), where the abundant use of water is advocated and the sugar solution dissuaded, on account of the formation of the resulting very caustic combination of lime with sugar. The consequent opacities of the cornea described by G. as deposits of lime and necrosis of the tissue are, according to the experiments of Andreae, insoluble combinations of lime with the parenchyma, viz., albuminates of calcium.

According to G's. subjective view, gonorrhoeal iritis occurs more frequently than generally supposed, and gonorrhea deserves the ne x place after syphilis in the etiology of iritis. He describes glaucomatous iritis as a special form which yields to miotics and hot applications.

In a very interesting chapter on sympathetic ophthalmia G. controverts the opinion of Deutschmann and Schirmer, that it occurs only after uveitis in consequence of traumatic or operative opening of the globe, and contends, that any plastic iridocyclitis, of whatever origin, may occasionally induce sympathetic ophthalmia. He does not acknowledge an essential difference between sympathetic irritation and sympathetic inflammation, but considers the former as the fore runner of the latter. As to the pathogenesis G. gives in extenso the clinical facts, which, as early as 1881, led him to consider the ciliary nerves as the path on which the sympathetic ophthalmia migrates to the other eye and which he therefore had called neuritis migrans.

The diseases of the lens and their treatment are thoroughly discussed. For the resorption of opacities of the vitreous G warmly recommends the use of alkaline-saline mineral waters, which, in his opinion, do not receive enough attention by oculists, and electricity advocated by French authors. Eye douches applied to the closed lids are of great value in myodesopsia of nervous patients.

G. maintains that choroiditis starts in the choroid, and not in the retina (Axenfeld). He found, next to mercury, hot and sulphur springs very effectual in the treatment of choroiditis. The choroiditis in myopic eyes is fully described and the hygienic measures for prevention as well as the operative treatment of myopia.

In retinitis pigmentosa G. observed an improvement of central vision and a widening of the visual field from subcutaneous injections of strychnin, but, of course, not lastingly. The differential diagnosis between affections of the inner layers of the retina and those of the rods, dependent in their nutrition on the choroid, is clearly set forth. Attention is again directed to the prognostic importance of retinitis simplex in general paralysis, first observed by Klein.

Deutschmann's treatment of detachment of the retina is repudiated and the method of Dor only described. With regard to embolism of the central retinal artery G. follows the recent views that cases described as such were rather cases of thrombosis from endarteritis obliterans. The impairment of sight remaining longer than the ophthalmoscopic symptom of commotion of the retina, is ascribed to irregular temporary astigmatism of the cornea, as proved by ophthalmometric measurements. G. warns against mercurials, especially in subcutaneous injections, in atrophy of the optic nerve, even when of tabic origin.

He observed in all his cases of hydrophthalmus (juvenile glaucoma) signs of rachitis or scrofulosis and sees its origin in hypersecretion and abnormally yielding walls of the globe. Eserin is a valuable palliative in the prodromal stages of glaucoma, and in acute glaucomatous attacks occurring in the course of acute diseases, e. g., influenza, to postpone iridectomy until the latter have subsided. The impairment of vision after faultless iridectomy in some cases is not always owing to a progress of glaucoma but very frequently to regular or irregular astigmatism produced by the scar. Sclerotomy is considered valuable as secondary operation after insufficient effect of iridectomy. The favorable results from the resection of the superior cervical ganglion, claimed by some authors, require further investigations.

G. found in toxic amblyopia besides pallor of the temporal halves of the optic discs, if on their temporary margins crescents existed, without exception haziness and irregular pigmentation of the latter. He first observed the frequent occurrence of central amblyopia in diabetes. His treatment consists in strychnin, steam and sulphur baths and nitrate of silver internally for the gastric catarrh generally found in such persons. In children the aspect of quinin amaurosis may be produced by salicylate of sodium, as G. observed in two cases. In all such cases he saw, the characteristic ophthalmoscopic picture remained unchanged for years. For treatment G. suggests vapor baths.

Tumors of the eye and diseases of the orbit are discussed in special chapters. In the treatment of Graves' disease strumectomy has improved quite a number of cases. The immediate effects of extirpation of the ganglion medium and the portion of the sympathetic nerve between the latter and the ganglion superius, according to Donath, were diminution of exophthalmus and shrinkage of the struma.

G. showed that the secretory nerve of the lacrymal gland is not the 5th, but the facial nerve, the fibers of which proceed through the nervus petrosus superficialis major to the ganglion sphenopalatinum and from there to the 2nd branch of the 5th. This is very important for the diagnosis of location of the affection causing facial paralysis, in which the eye is moist from the secretion of the whole conjunctival tract but does not weep on emotion, if damaged above the ganglion geniculi.

The last chapter deals with the diseases of the eyelids and their treatment, under which the operations for correction of faulty positions are also described. In amyotrophic ptosis G. found more satisfaction from the spectacle frames, devised by him, which, by pressing the orbital portion of the lid under the upper orbital margin inward, shorten and lift up the lid, than from operations. The same frames adapted to the lower lid have proved useful in senile spastic entropium.

The book is written in a very pleasant style. It reads very easily and imparts a great amount of useful information, so that we recommend its study most heartily. C. ZIMMERMANN.

### Atlas of Ophthalmoscopy.

HAAB, O., PROF., Zürich. Atlas und Grundriss der Ophthalmoscopie und ophthalmoscopischen Diagnostik. With 149 colored and 7 black figures. Third, enlarged, edition, München, 1900. Verlag von J. F. Lehmann. Price 10 Mk. $2.50.

The third materially enlarged edition (three years after the second) of this excellent and useful atlas, which serves chiefly practical purposes, will be gladly welcomed. It is preceded by a very clear treatise of 80 pages on ophthalmoscopy, i. e., explanation of the ophthalmoscope, direct examination with determination of refraction, indirect method, skiascopy, description of the normal fundus with due consideration of the reflexes from the anterior surface of the retina, and the phenomena of pulsation. To the author's remark that in the indirect method the use of convex 2 to 4 D. behind the mirror magnifies the inverted image, we may add that it allows the observer to relax his accommodation and thus prepare the beginner for the direct method where it is of paramount importance for the determination of refraction, as in microscopy, ophthalmometry and otoscopy, to accomplish continued examinations without discomfort and strain of his own eyes. As the best means to become proficient in ophthalmoscopy H. advises to make a practice of drawing from the living fundus which increases the faculty of observation and commits that which is seen best to memory. He here refers to his sketch book for ophthalmoscopic observations of the fundus of the eye, which he used himself in producing the excellent plates of this atlas.

An addition of 9 figures is made to this edition, viz., 1, changes of the fundus in leukemia, where arteries and veins show the same white discoloration from the light color of blood and changes of the walls, differing only by the tortuosity and wider lumen of the veins; 2, glioma of the retina; 3, air bubble in the upper portion of the vitreous, after entrance of a piece of iron, which looks similar to those in microscopic preparations and is a pathognomonic symptom of presence of a foreign body in the vitreous; 4, syphilitic affection of the retinal arteries consisting in closure of the lumen by arteritis obliterans with corresponding opacity of the adjacent region of the retina and hěmorrhages; 5, senile changes of the macula in form of yellowish red or yellow patches with slight pigmentation, which impair V considerably and incurably, and 6, similar to these, traumatic alterations of the macula, which develop within several weeks after contusions of the eyeball and differ from the opacity caused by commotion of the retina (Berlin) in that they damage V lastingly. 7 and 8, posterior vortex veins in the immediate neighborhood of the optic disc are sometimes observed in myopic eyes, which show very little pigment around the papilla. They present the same tortuosity of their branches as the regular vortex veins at the equator and seem to be in connection with myopia. Two such pictures are reproduced of two female patients, the one shows 5 choroidal veins submerging near the margin of the disc, and the other 3, of which one is very large. (Axenfeld recently demonstrated portion of vortex veins anatomically in an emmetropic eye and therefore does not consider them as characteristic of myopia. In the latter they probably are easier visable on account of the posterior staphyloma.—Reviewer.) 9. Recent detachment of the retina with the important symptom of the choroid not showing at that region. These as well as the other figures are all drawn from nature with exact reproduction of the important affections. Besides we find a number of anatomical pictures to promote the understanding of the normal and pathologic phenomena of the fundus.

The publisher, Mr. Lehmann, deserves special credit for the splendid and handy external appearance of the atlas and the moderate price. The atlas should be in the hands of every one who studies or practices ophthalmology. C. ZIMMERMANN.

### Sketch Book for Ophthalmoscopic Observations.

HAAB, O., DR. PROF., Zürich. (Skizzenbuch zur Einzeichnung von Augenspiegel-Bildern, 2nd edition, with 30 loose plates for drawing. München, 1898, J. F. Lehmann. Price, 3 Mk. 75 cents.)

The purpose of the sketch book is to facilitate the rapid drawing of important ophthalmoscopic pictures. The single leaves of thick paper bear the red color of the fundus, some without and some with optic disc, with and without the retinal vessels. Thus the observer needs only to erase the red color, for producing white or yellow patches. Black is drawn with lead pencil or pen and red of vessels or hemorrhages with red pencil or ink. The explanatory text gives full information as to the technique. H. drew the pictures for his atlas on the leaves of his sketch book, which clearly demonstrates their usefulness, not requiring any better recommendation. C. ZIMMERMANN.

### XXXV. Annual Report of the Eye Hospital at Basel.

MELLINGER, CARL, DR. PROF., Basel. M. Werner-Riehm, 1899, (from January 1st, to December 31, 1898.)

Two thousand eight hundred and eighty-three patients were treated in the policlinic, 609 in the clinic, 225 operations were performed. The following interesting cases are described in detail: Fibro-epithelioma at the sclero-corneal junction in a woman, aged 55 years. A crescent shaped intensely white tumor commences on the cornea, 2 mm. from the temporal pupillary margin, 11 mm. long, 5 mm. wide, 1 mm. thick, reaches over the limbus. The surface is rough, the consistency soft. Bloodvessels in the neighborhood enlarged, but do not extend into the tumor. Excision with scalpel.

Corneal ulcer with hypopyon after febrile herpes, which is very rare. It is due to infection of the cornea devoid of epithelium.

Purulent iritis caused by mercurial inunctions and subconjunctival injections of chloride of sodium in 2, 6 and 10 per cent. solutions.

Glaucoma after contusion of the eyeball without injury of the globe of any amount or dislocation of the lens. Retinal hemorrhages after iridectomy, but final recovery with V = 2/5.

Glaucomatous attacks with hyphema, in a woman aged 37, which was readily absorbed by subconjunctival NaCl injections.

Two cases of detachment of the retina in myopes of 27 and 38 years are minutely described. The first was cured, the second improved by subconjunctival Na Cl injections, the great value of which M. had observed in other cases. It is attributed to the tendency of the Na Cl solution to withdraw water from the subretinal exudation so that the retina can re-attach itself. The same good effect was seen in retinitis pigmentosa, i. e., no cure, but a postponement of the total failure of sight.

Within the last years very striking results were obtained, within a short. time, by treating cases of nervous asthenopia and hysteric amblyopia with over-nutrition and rest in bed. Two cases are described.

A man, aged 24, was stabbed by a knife through the left eye, the osseous portion of the nose into the right eye with resulting total blindness.

Retrobulbular abscess in a girl, aged 10, after a fall from a window of the first story of a house, striking the head upon the pavement. The abscess apparently developed from a retrobulbar hemorrhage, which became infected from the nose. After evacuation speedy recovery.

Two cases of ophthalmoplegia interior (in only one lues, could be proved), cured by inunctions with mercurial ointment, which were applied at once. In acute neuro-retinitis the same treatment yielded the best results. One case is described with recovered V = 2/3 to 1. The inunctions proved also beneficial in a case of atrophy of the optic nerves with opacities of the vitreous. A case of intense blepharospasm in a woman, aged 69, was cured by subcutaneous injections of strychnia in the temple, which are advocated.

We can only recommend to read the report which is full of interesting and instructive details. C. ZIMMERMANN.

41
547

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